COLUMBIA RIVER ESTUARY DREDGED

MATERIAL MANAGEMENT PLAN

Columbia River Estuary
Study Taskforce

See 107

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1. INTRODUCTION

1.1 PURPOSE AND PLAN CONTENT

In 1979 the Columbia River Estuary Study Taskforce (CREST) completed a Dredged Material Management Plan for the Columbia River Estuary. The primary purpose of the plan was to establish policies and standards for regulating dredging and disposal in the estuary and to identify an adequate number of sites with sufficient capacity to meet projected disposal needs over a 20 year period. Since 1979 dredging needs have changed, site capacities have been altered, and certain sites or portions of sites have been found to be unavailable for use due, for example, to the presence of important wetland habitat. Updating the policies and disposal site inventory to reflect the changes that have occurred over the past seven years will ensure that the Dredged Material Management Plan remains useful.

The purpose of this revised Dredged Material Management Plan is to refine the original dredging and disposal policies and to inventory an adequate number of disposal sites with sufficient capacity to accommodate projected disposal needs for at least a five year period. A five year span was selected as the minimum planning period. Many of the inventoried sites provide for disposal over a much longer time span. The Plan is designed to be incorporated into local comprehensive plans in Oregon and shoreline master programs in Washington to update these documents with respect to changes in disposal needs and regulatory policies.

The Plan is also intended to serve as a guide to dredging project sponsors and regulatory agencies in planning and reviewing dredging projects. In order to be a useful guide, it focuses on disposal sites that are both in the proximity of the dredging areas and appear approvable under existing regulatory requirements. In this way, the plan can be used to expedite the dredging project sponsors' search for appropriate disposal sites and regulatory agencies' permit review process.

The Plan is not intended to be an exhaustive list of all possible disposal sites and it in no way restricts the disposal of dredged materials to designated sites only. Also, the Plan does not guarantee site availability. In many cases designated sites are privately owned and their use will require owner approval. The plan does not obviate the need to obtain dredging and disposal permits. In all cases, use of a site for dredged material disposal will have to conform with local, state, and federal regulatory requirements.

The revised Plan consists of six major sections. Section 2 provides updated policies and standards for regulating dredging and disposal projects. These policies and standards reflect

refinements in local, state, and federal disposal policies that have occurred since 1979. Sections 3 and 4 include information on disposal site designation and plan implementation. Section 5 presents a summary of existing and potential dredging projects in the estuary and a projection of dredging volumes for a five years period. Section 6 inventories disposal sites needed to meet the projected dredging requirements. The final section compares the site and project inventories to determine if designated sites are adequate to meet dredging needs. Appendices in the document summarize dredging and disposal options (Appendix A), additional dredged material disposal sites (Appendix B), and changes made to the original dredged material disposal site inventory (Appendix C).

1.2 PLAN REVISION PROCESS

CREST coordinated the revision of the Dredged Material Management Plan with government organizations, citizens, and development interests in the lower Columbia River. To accomplish this coordination, CREST established two groups to assist in plan revisions. The first was a general review group consisting of about 65 individuals representing local governments, state and federal agencies, ports, citizens, commercial fishing interests, diking districts, and development interests. This group reviewed an initial draft disposal site inventory and the draft Dredged Material Management Plan. The second group, the Dredged Material Disposal Advisory Committee, consisted of 22 representatives from the general review group. This committee participated in four workshops to revise disposal policies and refine the initial disposal site inventory. The Advisory Committee also reviewed the draft Plan.

The process of revising the Dredged Material Management Plan to meet anticipated dredging needs began with the production and distribution of an initial draft disposal site inventory. The inventory listed sites from the original CREST Plan, the 1983 Corps Maintenance Disposal Plan for the Columbia River, and local comprehensive plans and shoreline master programs. The dredged material disposal advisory groups reviewed and provided comments on the site inventory. Then, CREST conducted Advisory Committee workshops to refine the inventory by adding new sites in areas where additional disposal capacity was necessary, deleting sites that were found to be unavailable due, for example, to the presence of large areas of significant wetlands, and re-drawing the boundaries of many sites to avoid potential environmental and land-use impacts. The Advisory Committee also worked to revise the dredging and disposal regulatory policies at the workshops. Both the updated inventory and revised policies are incorporated into this plan.

Figure 1 (following page). Map of the Columbia River Estuary

Columbia River Estuary

Scale 1:160,000

0 1 2 3 4 5 6 7 8 9 10 Kilometers

0 1 2 3 4 5 6 Miles

Map produced in 1983 by Northwest Cartography, Inc.
for the Columbia River Estuary Data Development Program

Shoreline (limit of non-aquatic vegetation)

Intertidal vegetation

Shoals and flats

Lakes, rivers, other non-tidal water features

Major highways

• Megler Cities, towns

Railroads

Other cultural features

2. DREDGING AND DREDGED MATERIAL DISPOSAL POLICIES AND STANDARDS

A revision of policies and standards regulating dredging, disposal, and disposal site selection was necessary to reflect policy refinements that have occurred since the original plan was completed in 1979. This section begins with definitions of selected terms and phases that appear in the policies and standards. The policies and standards follow the definitions. The final part of this section identifies management units or shoreline designations in which different types dredging and disposal uses and activities are allowed. The definitions, policies, and standards are intended for direct incorporation into local comprehensive plans and shoreline master programs. Local plans and shoreline management programs should use the information provided in the final part of this section to revise their lists of uses and activities allowed in each of the affected management units.

2.1 DEFINITIONS

The terms and phrases listed below are defined in the context of their usage in Section 2.2, Dredging and Dredged Material Disposal Policies and Standards, and in other parts of this plan. These definitions are to be considered regulatory in that they set important limits on actions associated with dredging and disposal projects.

Beach Nourishment: Placement of sand material on actively eroding beach sites identified in the Dredged Material Management Plan to maintain the historic beach profile. Beach nourishment does not include creation of new land area or beaches and must provide for the protection of estuarine resources (including habitat, nutrient, fish, wildlife, and aesthetic resources). Dredged material may be used for beach nourishment.

Dredged Material: Sediments, gravels, and other solids removed from an aquatic area.

Dredged Material Disposal: The deposition of dredged materials in aquatic or land areas. Methods include land disposal (deposition in specific land areas or on the tops and landward sides of flood protection dikes) and in-water disposal (including beach nourishment, flow-lane disposal, estuarine open water disposal, and ocean disposal).

Dredging: The removal of sediment or other material from an aquatic area for the purposed of deepening the area, obtaining fill material, or mining and mineral extraction.

Drift Right: A specific area or section of river bottom that has been cleared of snags and sunken debris and is shared and actively maintained by a group of fishermen as their fishing grounds.

Dike: With regard to dredged material disposal, a structure consisting of sediments, rock, or other material designed to contain the dredged material and allow for settling of solids in a specific area while it is being deposited and after deposition has occurred. The term "dike" is also used in this plan to describe flood control structures. Flood control dikes are sometimes repaired or reinforced with dredged material.

Effluent: Water, including dissolved and suspended materials, which flows from a dredged material disposal site.

Estuarine Open-Water Disposal: All types of in-water disposal within the estuary which do not fall into the classifications of flow-lane disposal, beach nourishment, sump disposal, and disposal to provide fill material for an approved aquatic area fill project.

Flow-Lane Disposal: Deposition of dredged material in or adjacent to a natural or maintained navigation channel in an area where the prevailing sediment transport will carry the material downstream. Flow-lane disposal is allowed only in development management units.

In-Water Disposal: Deposition of dredged materials in an aquatic area. Methods include beach nourishment, flow-lane disposal, estuarine open-water disposal, in-water sump disposal, and ocean disposal.

Land Disposal: Deposition of dredged materials on uplands or shorelands, including on the top and landward sides of flood control dikes.

Maintenance Dredging: Dredging of a channel, basin, or other water-dependent facility which has been dredged before and is currently in use or operation or has been in use or operation sometime during the past five years, provided that the dredging does not deepen the facility beyond its previously authorized or approved depth plus customary overdredging.

New Dredging: Dredging a channel, basin, or other water-dependent facility that has not been dredged before; deepening an existing dredged channel, basin, or other water-dependent facility beyond its previously authorized or approved depth; dredging a channel, basin, or other water-dependent facility that has not been in use or operation in the past five years.

Sump Disposal, In-water: Deposition of dredged materials in a temporary in-water holding area and subsequently rehandling the

material to place it on a land disposal site.

2.2 POLICIES AND STANDARDS

2.2.1 Dredging and Dredged Material Disposal Policies

1. Dredging shall be allowed only:

    a. If required for navigation or other water-dependent uses that require an estuarine location or if specifically allowed by the applicable management unit requirements and,

    b. if a need (i.e., a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights; and,

    c. if no feasible alternative upland locations exist; and,

    d. if adverse impacts are minimized.

2. Dredging and dredged material disposal shall not disturb more than the minimum area necessary for the project and shall be conducted so as to minimize impacts on wetlands and other estuarine resources. Loss or disruption of fish and wildlife habitat and damage to essential properties of the estuarine resource shall be minimized by careful location, design, and construction of:

    a. Facilities requiring dredging,

    b. sites designated to receive dredged material, and

    c. dredging operation staging areas and equipment marshalling yards.

Dredged materials shall not be placed in intertidal or tidal marsh habitats or in other areas that local, state, or federal regulatory agencies determine to be unsuitable for dredged material disposal. Exceptions to the requirement concerning disposal in an intertidal or tidal marsh area include use of dredged material as a fill associated with an approved fill project or placement of dredged materials in the sandy intertidal area of a designated beach nourishment site. Land disposal shall enhance or be compatible with the final use of the site area.

3. The timing of dredging and dredged material disposal operations shall be coordinated with state and federal resource agencies, local governments, and private interests to protect estuarine aquatic and shoreland resources, minimize interference with recreational and commercial fishing operations, including

snag removal from gillnet drifts, and insure proper flushing of sediment and other materials introduced into the water by the project.

4. The effects of both initial and subsequent maintenance dredging, as well as dredging equipment marshalling and staging, shall be considered prior to approval of new projects or expansion of existing projects. Projects will not be approved unless disposal sites with adequate capacity to meet initial excavation dredging and at least five (5) years of expected maintenance dredging requirements are available.

5. Dredging subtidal areas to obtain fill material for dike maintenance may be allowed subject to Dredging Standard 10.

6. Dredging for mining and mineral extraction, including sand extraction, shall only be allowed in areas deeper that 10 feet below MLLW where the project sponsor demonstrates that mining and mineral extraction in aquatic areas is necessary because no feasible upland sites exist and that the project will not significantly impact estuarine resources. The estuary bottom at the project site shall be sloped so that sediments from areas shallower than 10 feet below MLLW and other areas not included in the project's impact assessment do not slough into the dredged area. Dredging as part of an approved dredging project which also provides fill for an approved fill project shall not be subject to the mining and mineral extraction policies and standards.

7. Where a dredged material disposal site is vegetated, disposal should occur on the smallest land area consistent with sound disposal methods (e.g., providing for adequate dewatering of dredged sediments, avoiding degradation of receiving waters). Clearing of land should occur in stages and only as needed. It may, however, be desirable to clear and fill an entire site at one time, if the site will be used for development immediately after dredged material disposal. Reuse of existing disposal sites is preferred to the creation of new sites provided that the dikes surrounding the site are adequate or can be made adequate to contain the dredged materials.

8. Disposal of dredged materials in intertidal areas shall only be allowed at designated beach nourishment sites or to provide fill material for an approved intertidal fill project.

2.2.2 Dredged Material Disposal Site Selection And Site Reservation Policies

1. When identifying land dredged material disposal sites, emphasis shall be placed on sites where (not in priority order):

a. The local comprehensive plan land use designation is

development provided that the disposal does not preclude future development at the site;

b. The potential for the site's final use will benefit from deposition of dredged materials;

c. Material may be stockpiled for future use;

d. Dredged spoils containing organic, chemical, and/or other potentially toxic or polluted materials will be properly contained, presenting minimal health and environmental hazards due to leaching or other redistribution of contaminated materials;

e. Placement of dredged material will help restore degraded habitat; or where

f. Wetlands would not be impacted.

g. (Washington Jurisdictions add: "The land is owned by the state or, secondly, where the land is owned or leased by a county, port, or other public entity.")

Important fish and wildlife habitat, or areas with scenic, recreational, archaeological, or historical values that would not benefit from dredged material disposal and sites where the present intensity or type of use is inconsistent with dredged material disposal shall be avoided. (Oregon jurisdictions add: "The use of agricultural or forest lands for dredged material disposal shall occur only when the project sponsor can demonstrate that the soils can be restored to agricultural or forest productivity after disposal use in completed. In cases where this demonstration cannot be made, an exception to the Agricultural Lands or Forest Lands Goal must be taken and included as an amendment to the Comprehensive Plan prior to the use of the site for dredged material disposal. The use of shoreland water dependent development sites for dredged material disposal shall occur only when the project sponsor can demonstrate that the dredged material placed on the site will be compatible with current or future water dependent development. Dredged material disposal shall not occur in significant Goal 17 wetlands.)

Engineering factors to be considered in site selection shall include: size and capacity of the site; dredging method; composition of the dredged materials; distance from dredging operation; control of drainage from the site; elevation; and the costs of site acquisition, preparation and revegetation.

2. Estuarine in-water disposal sites shall be in areas identified as low in benthic productivity, unless the disposal is to provide fill material for an approved fill project, and where disposal at the site will not have adverse hydraulic effects. Estuarine in-water disposal sites shall only be designated and used when it is demonstrated that no feasible land or ocean

disposal sites can be identified and biological and physical impacts are minimal*. An in-water disposal site shall not be used if sufficient sediment type and benthic data are not available to characterize the site.

3. Flow lane disposal sites shall only be allowed in development designated areas within or adjacent to a channel where:

   a. Sediments can reasonable be expected to be transported downstream without excessive shoaling,

   b. Interference with recreational and commercial fishing operations, including snag removal from gillnet drifts, will be minimal or can be minimized by applying specific timing restrictions,

   c. Adverse hydraulic effects will be minimal,

   d. Adverse effects on estuarine resources will be minimal, and

   e. The disposal site depth is between 20 and 65 feet below MLLW.

4. Beach nourishment sites shall only be designated on sandy beaches currently experiencing active erosion. Dredged material disposal at beach nourishment sites shall only be used to offset the erosion and not to create new beach or land areas. Beach nourishment sites shall not be designated in areas where placement or subsequent erosion of the dredged materials would adversely impact tidal marshes or productive intertidal or shallow subtidal areas. (Oregon Jurisdictions add: "Designation of new beach nourishment sites shall require an exception to Statewide Planning Goal 16.)

5. Dredged material disposal sites with adequate capacity to accommodate anticipated dredging needs for at least a five year

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*This requirement may be construed to conflict with two other existing dredged material disposal policies. First, it may be desirable to reserve land sites for fine or contaminated material only, even when there is a dredging project within an economical distance from the site which removes coarse, clean material. The descriptions of sites in Section 5, Dredged Material Disposal Site Inventory, state which sites are reserved for fine grained sediments only. The reservation of such sites for fine material renders them "not feasible" sites for use in coarse-grained disposal projects. The second apparent conflict is with the Marine Protection Research and Sanctuaries Act (1972). Provisions of this act state that ocean disposal will not be allowed if alternative areas of disposal are available. Oregon's Statewide Planning Goal 16 states that ocean disposal must be considered prior to estuarine in-water disposal. The policies in this plan are consistent with the Statewide Planning Goals.

period shall be identified and designated. Additional sites may also be designated. All dredged material disposal sites shall receive a Priority I or II designation with respect to its suitability and importance for meeting five-year dredging needs.

A. Priority 1 Dredged Material Disposal Sites

Sites which are essential for meeting anticipated five-year disposal needs shall receive a Priority 1 designation. Priority 1 shoreland sites shall be protected from incompatible and preemptive uses to ensure adequate sites will remain available to accommodate five-year disposal needs. Incompatible and preemptive uses include:

1. Uses requiring substantial structural or capital improvements (e.g., construction of permanent buildings, water and sewer service connections);

2. Uses that require alteration of the topography of the site, thereby affecting the drainage of the area or reducing the potential useable volume of the dredged material disposal site (e.g., extensive site grading or excavation, elevation by placement of fill materials other than dredged spoils);

3. Uses that include changes made to the site that would prevent expeditious use of the site for dredged material disposal. Such uses would delay deposition of dredged material on the site beyond the period of time commonly required to obtain the necessary federal, state and local dredging and dredged material disposal permits (approximately 90 days);

(Note: Examples of non-preemptive or compatible uses of shoreland dredged material disposal sites are: unimproved parking lots, equipment storage yards, materials marshalling yards, log storage and sorting yards, and undeveloped recreation areas, campgrounds or recreational vehicle parking areas.)

Incompatible or preemptive uses shall not be allowed at shoreland Priority 1 dredged material disposal sites unless the site is removed from the dredged material disposal plan by ordinance amendment upon demonstration that either:

1. The site has been filled to capacity and is available for other uses, or

2. the site is, in fact, not required to accommodate anticipated five-year disposal needs, or

3. a new Priority 1 site has been designated to replace the site being removed.

B. Priority II Dredged Material Disposal Sites

Dredged material disposal sites which are not required for anticipated five-year disposal needs but which may be required to meet longer range needs shall be given a Priority II designation. The importance of these sites, as compared with Priority I sites, does not justify efforts to reserve all or portions of each site from possible preemptive uses.

A 30 day freeze shall be placed on preemptive development requests (as defined in "A", above), for the purpose of allowing affected government agencies or private interests to negotiate for the use of the property as a disposal site. Individual jurisdictions may choose to run this freeze concurrently or in addition to the normal permit process. If there is no expressed interest in use of the site for dredged material disposal during the freeze period, the development request shall be reviewed under normal procedures. If the request is approved, the entire site or affected portions of the site shall be removed from the dredged material disposal plan by ordinance amendment.

6. In order to ensure the adequacy of identified dredged material disposal site capacities for anticipated five-year disposal requirements, an analysis of the dredge material disposal site inventory shall be completed every five years. The analysis shall include:

a. A determination of the Priority 1 sites utilized for dredged material disposal and the volume received by each site during the preceding period, noting also the project source of the dredged material and the interval separating the most recent from the next anticipated dredging event.

b. A determination of the number and usable volume of Priority 1 sites remaining in the inventory, and the relationship between these sites and present or expected navigation-related dredging or water-dependent development projects in the following five year period, and the number and useable volume of Priority II sites identified in the inventory.

c. An identification of the Priority II or other additional sites to be added to the Priority 1 inventory.

d. An analysis of the adequacy of the dredged material site inventory shall include notification of an communication of up-dated inventory information to affected property owners and local, state and federal governmental agencies. Of particular importance is the addition, deletion, or change in priority of dredged material disposal sites.

e. Each jurisdiction shall cooperate with other jurisdictions on the Columbia River Estuary in monitoring of

dredged material site availability and in dredged material disposal plan update.

2.2.3 Dredging Standards

1. Dredging in estuarine aquatic areas, subject to dredging and dredged material disposal policies and standards, shall be allowed only:

   a. if specifically allowed by the applicable management unit and required for one or more of following uses and activities:

      1. navigation or navigational access;

      2. an approved water dependent use of aquatic areas or adjacent shorelands that require an estuarine location;

      3. an approved restoration project;

      4. mining or mineral extraction;

      5. excavation necessary for approved bridge crossing support structures, or pipeline, cable, or utility crossing;

      6. obtaining fill material for dike maintenance (Oregon jurisdictions add: "where a Goal 16 exception has been approved");

      7. maintenance of existing tidegates and tidegate drainage channels (Oregon jurisdictions add: "where a Goal 16 exception has been approved");

      8. aquaculture facilities; and

   b. if a need (i.e., a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights; and

   c. if no feasible alternative upland locations exist; and

   d. if adverse impacts are minimized.

2. When dredging is permitted, the dredging shall be the minimum necessary to accomplish the proposed use.

3. Erosion, sedimentation, increased flood hazard, and other undesirable changes in circulation shall be avoided in dredging and the disposal of dredged material.

4. The timing of dredging and dredged material disposal operations shall be coordinated with state and federal resource agencies, local governments, and private interests to protect estuarine aquatic and shoreland resources, minimize interference with commercial and recreational fishing, and insure proper flushing of sediment and other materials introduced into the water by the project.

5. Bottom sediments in the dredging area shall be characterized by the applicant in accordance with U.S. Environmental Protection Agency, Washington Department of Ecology, and Oregon Department of Environmental Quality standards. Information that may be required includes, but is not limited to, sediment grain size distribution, organic content, oil and grease, selected heavy metals, pesticides, and benthic biological studies.

6. Adverse short-term effects of dredging and aquatic area disposal such as increased turbidity, release of organic and inorganic materials or toxic substances, depletion of dissolved oxygen, disruption of the food chain, loss of benthic productivity, and disturbance of fish runs and important localized biological communities shall be minimized.

7. Impacts on areas adjacent to the dredging site such as destabilization of fine-textured sediments, erosion, siltation, and other undesirable changes in circulation patterns shall be minimized.

8. The effects of both initial and subsequent maintenance dredging, as well as dredging equipment marshalling and staging, shall be considered prior to approval of new projects or expansion of existing projects. Projects will not be approved unless disposal sites with adequate capacity to meet initial excavation dredging and at least five years of expected maintenance dredging requirements are available.

9. Minor dredging of existing tidegate drainage channels and drainage ways is limited to the amount necessary to maintain and restore flow capacity essential for the function (the drainage service provided by the tidegate) of tidegates and to allow drainage and protection of agricultural and developed areas. Tidegate maintenance dredging does not include enlarging or extending the dimensions of, or changing the bottom elevations of, the affected tidegate drainage channel or drainage way as it existed prior to the accumulation of sediments.

10. Dredging of subtidal estuarine areas as a source of fill material for dike maintenance, in all aquatic area designations, may be allowed upon the applicant's demonstration that:

    1. Alternative methods of accomplishing dike maintenance are infeasible (i.e., dikes proposed for receiving dredged material are remote from upland sources of fill material and that land-based heavy equipment access to

the dike area is not possible);

2. Dredging in all cases will be limited to that necessary to maintain the dikes. Dredging as a source of fill material for dike maintenance does not include enlarging or changing the bottom contour of natural aquatic areas for navigation of any other aquatic area use;

3. Dredging will not disturb or excavate emergent vegetation, intertidal flats, or other adjacent intertidal estuarine resources;

4. Dredging as a source of fill material for dike maintenance will, in all cases, take place in subtidal aquatic areas, and shall be limited to the deepest subtidal aquatic area accessible to float-mounted dredging equipment. In narrow tributary areas of the estuary, dredging shall be limited to the deepest subtidal areas nearest the centerline of the waterway. In reaches of the estuary exceeding 200 feet in width, dredging shall be limited to subtidal areas greater than 80 feet in distance from the waterward toe of the dikes. The intent of this standard is to protect the the dike structures from sloughing, maintain existing berms and shoal water immediately adjacent to dikes, and limit dredge excavations to subtidal areas below the level of effective light penetration.

5. Dredging will not be confined to localized areas of river bottom. All excavations as a source of fill material shall be lineally dispersed along the entire dike maintenance area. Dredging shall not alter the existing contour of the river bottom such that deep trenches and pockets capable of stranding or impeding estuarine lifeforms will be created.

6. Dredging operations shall be consistent with state and federal resource agency conditions, the requirements of local governments, and concerns of private interests, to ensure that project timing and dredging conditions protect estuarine resources (e.g., fish runs, spawning activity, benthic productivity, wildlife habitat, etc.)

11. Dredging for mining and mineral extraction, including sand extraction, shall only be allowed in areas deeper that 10 feet below MLLW where the project sponsor demonstrates that mining and mineral extraction in aquatic areas is necessary because no feasible upland sites exist and that the project will not significantly impact estuarine resources. The estuary bottom at the project site shall be sloped so that sediments from areas shallower than 10 feet below MLLW and other areas not included in the project's impact assessment do not slough into the dredged area. Dredging as part of an approved dredging project which also provides fill for an approved fill project shall not be

subject to the mining and mineral extraction policies and standards.

12. When proposing dredging for sand extraction, the project sponsor shall first consider obtaining the material from a shoaled area within a federally-authorized navigation channel that is currently shallower that its authorized depth. Said dredging shall be coordinated with the U.S. Army Corps of Engineers. The dredging depth shall not exceed the authorized channel depth plus any overdredging that the Corps would normally perform while maintaining the site.

Oregon Jurisdictions add the following policies:

13. New dredging in Aquatic Conservation management units may be permitted only for:

    a. Aquaculture;

    b. High intensity water-dependent recreation, including boat ramps and marinas;

    c. Minor navigational improvements;

    d. Mineral extraction;

    e. Obtaining fill material for dike maintenance where a Goal 16 exception has been approved;

    f. Active restoration;

    g. Bridge crossing support structures;

    h. Pipelines, cables, and utility crossings;

    i. Maintenance of existing functional tidegates and associated drainage channels.

Dredging for items a, b, c, d, or f shall be allowed only where said dredging is consistent with the resource capabilities of the affected management unit.

14. New dredging in Aquatic Natural management units may be permitted only for:

    a. Maintenance or installation of bridge crossing support structures;

    b. Obtaining fill material for dike maintenance where a Goal 16 exception has been approved;

    c. Maintenance of existing functional tidegates and associated drainage channels;

d. Pipelines, cables, and utility crossings.

Dredging for installation of bridge crossing support structures and for pipelines, cables, and utility crossings shall be allowed only where said dredging is consistent with the resource capabilities of the affected management unit.

2.2.4 Dredged Material Disposal Standards

1. Dredged material disposal shall occur only at designated sites or at new sites which meet the requirements of the Dredged Material Disposal Site Selection Policies.

2. Proposals for in-water disposal of dredged materials, including flow-lane disposal, beach nourishment, estuarine open-water disposal, and ocean disposal, shall:

   a. Demonstrate the need for the proposed action and that there are no alternative disposal sites or methods that entail less damaging environmental impacts; and

   b. Demonstrate that the dredged sediments meet state and federal sediment testing requirements and water quality standards; and

   c. Not be permitted in the vicinity of a public water intake.

3. Flow-lane disposal and estuarine open water disposal shall be monitored to assure that estuarine sedimentation is consistent with the resource capabilities and purpose of affected natural and conservation management units. The monitoring program shall be established prior to undertaking disposal. The program shall be designed to both characterize baseline conditions prior to disposal and monitor the effects of the disposal. For projects that involve disposal on three year or shorter intervals, this requirement may be waived by the affected jurisdiction(s) after adequate monitoring has been conducted to demonstrate that estuarine sedimentation is consistent with the resource capabilities and purpose of the affected natural and conservation management units. If more that three years has elapsed since the previous disposal action or if disposal amounts have increased substantially over the previous disposal volume this requirement shall not be waived.

4. Flow-lane disposal sites shall be in areas identified as low in benthic productivity and use of these sites shall not have adverse hydraulic effects. Use of disposal sites in the estuary shall be allowed only when no feasible alternative land or ocean disposal sites can be identified and the biological and physical impacts of flow-lane disposal are demonstrated to be insignificant. Long term use of a flow-lane disposal site may only be

allowed if monitoring confirms that the impacts are insignificant. Flow-lane disposal is contingent upon demonstration that:

a. Adverse effects due to changes in biological and physical estuarine properties will not result;

b. Flow-lane disposal sites shall be shown able to transport sediment downstream without excessive shoaling, interference with recreational and commercial fishing operations, including the removal of snags from gillnet drifts, undesirable hydraulic effects, or adverse effects on estuarine resources (fish runs, spawning activity, benthic productivity, wildlife habitat, etc.).

5. Ocean disposal shall be conducted such that:

a. The amount of material deposited at a site is compatible with benthic populations, other marine resources,and other uses of the area;

b. Interference with sport and commercial fishing is minimized;

c. Disposal is strictly confined to the sites designated by the U.S. Environmental Protection Agency; and

d. The disposal site does not shoal excessively and create dangerous wave and swell conditions.

6. Except for flow-lane disposal and beach nourishment disposal of dredged materials inside the estuary shall be substituted for ocean disposal only when the use of ocean disposal sites is not feasible.

7. Beach nourishment shall only be conducted at sites identified in the dredged material disposal plan. New sites may be added to the Plan by ordinance amendment (Oregon jurisdictions add: "after a Goal 16 exception for the site has been approved). Beach nourishment shall be conducted such that:

a. The beach is not widened beyond its historical profile. The historical profile shall be defined as the widest beach profile that existed prior to June 1986.

b. The material placed on the beach consists of sand of equal or greater grain size that the sand existing on the beach.

c. Placement and subsequent erosion of the materials does not adversely impact tidal marshes or productive intertidal and shallow subtidal areas.

d. Efforts shall be made to maintain a stable beach

profile.

e. Dredged material is graded at a uniform slope and contoured to minimize juvenile fish stranding and hazards to beach users.

8. Except as noted below, land disposal and site preparation shall be conducted such that:

a. Surface runoff from disposal sites is controlled to protect water quality and prevent sedimentation of adjacent water bodies, wetlands, and drainage ways. Disposal runoff water must enter the receiving waterway through a controlled outfall at a location with adequate circulation and flushing characteristics. Underground springs and aquifers must be identified and protected;

b. Dikes are constructed according to accepted engineering standards and are adequate to support and contain the maximum potential height and volume of dredged materials at the site, and form a sufficiently large containment area to encourage proper ponding and to prevent the return of dredged materials into the waterway or estuary. Containment ponds and outfall weirs shall be designed to maintain adequate standing water at all times to further encourage settling of dredged materials. The dikes shall be constructed within the boundaries of the disposal site and shall be constructed of material obtained from within the site or other approved source.

Clean dredged material placed on land disposal sites located directly adjacent to designated beach nourishment sites may be allowed to flow directly into the waterway without conforming to "a" and "b", above, provided that all policies and standards for in-water disposal and beach nourishment are met and the dredged materials are not allowed to enter wetlands or the waterway in areas other than the designated beach nourishment site.

9. Land disposal sites which are not intended for dredged material disposal or development use within a two year period following disposal shall be revegetated as soon as site and weather conditions allow, unless habitat management plans agreed upon by resource management agencies specify that open sand areas should remain at the site. The project sponsor shall notify the local jurisdiction and state and federal permitting and resource management agencies when disposal is completed and shall coordinate revegetation with these agencies. The notification shall be sent to at least the following agencies: the local jurisdiction, U.S. Army Corps of Engineers, Soil Conservation Service, Division of State Lands (Oregon Projects), Oregon Department of Fish and Wildlife (Oregon Projects), and Washington Departments of Game and Ecology (Washington Projects). Revegetation of a disposal

site does not preclude future use of the sites for dredged material disposal.

10. The final height and slope after each use of a land dredged material disposal site shall be such that:

    a. The site does not enlarge itself by sloughing and erosion into adjacent areas;

    b. Loss of materials from the site during storms and freshets is minimized;

    c. Interference with the view from nearby residences, scenic points, and parks does not occur.

2.3 MANAGEMENT UNITS

Dredging and dredged material disposal can only be allowed in selected zoning designations (Oregon) and shoreline management designations (Washington).

Types of dredging and dredged material disposal uses and activities are listed below. Tables showing the zone or shoreline management designation in which the uses and activities may be permitted follow the list.

2.3.1 Uses and Activities Associated with Dredging and Dredged Material Disposal

1. Maintenance dredging of existing facilities.

2. Dredging for new navigation projects.

3. New dredging for existing or planned and approved public boat ramps and marinas.

4. Minor dredging of existing tidegate channels and drainageways (Oregon jurisdictions add: "where a Goal 16 exception has been approved").

5. Minor navigational improvements limited to minor dredging of shoals in naturally existing channels that have been traditionally used for navigation.

6. Dredging within a currently maintained federally-authorized navigation channel in a shoaled area currently requiring dredging for the purpose of sand or gravel extraction.

7. Dredging subtidal aquatic areas as a source of fill material for dike maintenance (Oregon jurisdictions add: "where a Goal 16 exception has been approved").

8. Dredging for mining or mineral extraction other than as provided for in 6 above.

9. New dredging for approved aquaculture facilities.

10. Dredged material disposal at land sites designated in the Dredged Material Management Plan.

11. Dredged material disposal at land sites not designated in the Material Management Plan provided that disposal at the site does not conflict with existing or future land uses (Oregon jurisdictions add: ", including water-dependent development, agricultural uses, forestry uses, and significant Goal 17 resources").

12. Beach Nourishment at sites designated in the Dredged Material Management Plan (Oregon jurisdictions add: where a Goal 16 exception has been approved).

13. Flow-lane, estuarine open-water, and sump disposal of dredged materials within areas designated in the Dredged Material Management Plan.

14. Dredged material disposal to provide fill for an approved fill project.

Table 1. Dredging and Dredged Material Disposal Use and Activity Matrix for Pacific County

	Environmental Designation							
Use/Activity	D-a	C-a	N-a	WD-s	D-s	R-s	C-s	N-s
1	P	P	N	-	-	-	-	-
2	P	N	N	-	-	-	-	-
3	P	P	N	-	-	-	-	-
4	P	P	P	-	-	-	-	-
5	P	P	N	-	-	-	-	-
6	P	-	-	-	-	-	-	-
7	P	P	P	-	-	-	-	-
8	P	P	N	-	-	-	-	-
9	P	P	N	-	-	-	-	-
10	-	-	-	P	P	P	P	N
11	-	-	-	P	P	P	P	N
12	P	P	N	P	P	P	P	N
13	P	-	-	-	-	-	-	-
14	P	P	P	P	P	P	P	P

D-a: Development Aquatic
C-a: Conservation Aquatic
N-a: Natural Aquatic
WD-s: Water Dependent Development Shorelands
D-s: General Development Shorelands
R-s: Rural Shorelands
C-s: Conservation Shorelands
N-s: Natural Shorelands
P: Permitted
N: Not allowed
"-": Not applicable

Table 2. Dredging and Dredged Material Disposal Use and Activity Matrix for the Town of Hammomd

Use/Activity	Zone AD	AC	I-1	SC	C-2	GDS
1	P	C*	-	-	-	-
2	C*	N	-	-	-	-
3	C*	C*	-	-	-	-
4	P	P	-	-	-	-
5	C*	C*	-	-	-	-
6	P	-	-	-	-	-
7	R	R	-	-	-	-
8	C*	C*	-	-	-	-
9	C*	C*	-	-	-	-
10	-	-	P	P	P	P
11	-	-	R	R	R	R
12	P	P	P	P	P	P
13	C*	-	-	-	-	-
14	P	P	P	P	P	P

*Also Subject to a Resource Capability Determination

AD: Aquatic Development
AC: Aquatic Conservation
I-1: Marine Industrial
SC: Shorelands Conservation
C-2: Recreation Commercial
GDS: General Development Shorelands Overlay Zone
P: Semi-Restricted Use Permitted
R: Review Use
C: Conditional Use
N: Not allowed
"-": Not applicable

Table 3. Dredging and Dredged Material Disposal Use and Activity Matrix for the City of Warrenton

Use/Activity	Zone A-1	A-2	A-3	A-4	I-3	C-3	EB	I-4	All
1	P	C*	N	C*	-	-	-	-	-
2	C*	N	N	N	-	-	-	-	-
3	C*	C*	N	N	-	-	-	-	-
4	P	P	P	P	-	-	-	-	-
5	C*	C*	N	C*	-	-	-	-	-
6	P	-	-	-	-	-	-	-	-
7	R	R	R*	R*	-	-	-	-	-
8	C*	C*	N	N	-	-	-	-	-
9	C*	C*	N	N	-	-	-	-	-
10	-	-	-	-	P	P	P	P	P
11	-	-	-	-	R	R	R	R	R
12	P	P	N	N	P	P	P	P	P
13	C*	-	-	-	-	-	-	-	-
14	P	P	P	P	P	P	P	P	P

* Also Subject to a Resource Capability Determination

A-1: Aquatic Development
A-2: Aquatic Conservation
A-3: Aquatic Natural
A-4: Limited Conservation Aquatic
I-3: Water-Dependent Industrial
C-3: Marine Commercial
EB: Skipanon East Bank Mediated Development
I-4: Airport Development
All: All other zones within the shoreland boundary (excluding significant Goal 17 wetlands)
P: Permitted Use
R: Review Use
C: Conditional Use
N: Not allowed
"-": Not applicable

Table 4. Dredging and Dredged Material Disposal Use and Activity Matrix for the City of Astoria

Use/ Activity	Zone									
	A-1	A-2	A-3	A-4	TP	S-1	S-2	S-3	S-4	S-5
1	P	P	C*	N	-	-	-	-	-	-
2	C*	C*	N	N	-	-	-	-	-	-
3	C*	C*	C*	N	-	-	-	-	-	-
4	P	P	P	P	-	-	-	-	-	-
5	C*	C*	C*	N	-	-	-	-	-	-
6	P	-	-	-	-	-	-	-	-	-
7	R	R	R	R*	-	-	-	-	-	-
8	C*	C*	C*	N	-	-	-	-	-	-
9	C*	C*	C*	N	-	-	-	-	-	-
10	-	-	-	-	P	P	P	P	P	N
11	-	-	-	-	R	R	R	R	R	N
12	P	P	P	N	P	P	P	P	P	N
13	C*	C*	-	-	-	-	-	-	-	-
14	P	P	P	P	P	P	P	P	P	P

* Also Subject to a Resource Capability Determination

A-1: Aquatic One Development
A-2: Aquatic Two Development
A-3: Aquatic Conservation
A-4: Aquatic Natural
TP: Tongue Point Mediated Development
S-1: Marine Industrial Shorelands
S-2: General Development Shorelands
S-3: Limited Development Shorelands
S-4: Conservation Shorelands
S-5: Natural Shorelands
P: Permitted Use
R: Review Use
C: Conditional Use
N: Not allowed
"-": Not applicable

Table 5. Dredging and Dredged Material Disposal Use and Activity Matrix for Clatsop County

	Zone							
Use/Activity	AD	AC-2	AC-1	AN	MI	CS	NS	/SO
1	P	C*	C*	N	-	-	-	-
2	C*	N	N	N	-	-	-	-
3	C*	C*	N	N	-	-	-	-
4	P	P	P	P	-	-	-	-
5	C*	C*	N	N	-	-	-	-
6	P	-	-	-	-	-	-	-
7	R	R	R*	R*	-	-	-	-
8	C*	C*	N	N	-	-	-	-
9	C*	C*	N	N	-	-	-	-
10	-	-	-	-	P	P	N	P
11	-	-	-	-	R	R	N	R
12	P	P	N	N	P	P	N	P
13	C*	-	-	-	-	-	-	-
14	P	P	P	P	P	P	P	P

* Also Subject to a Resource Capability Determination

AD: Aquatic Development
AC-2: Aquatic Conservation Two
AC-1: Aquatic Conservation One
AN: Aquatic Natural
MI: Marine Industrial Shorelands
CS: Conservation Shorelands (category 2 only)
NS: Natural Shorelands
/SO: Shoreland Overlay District (category 2 only)
P: Permitted Use
R: Review Use
C: Conditional Use
N: Not allowed
"-": Not applicable

Table 6. Dredging and Dredged Material Disposal Use and Activity Matrix for Wahkiakum County

	Environmental Designations							
Use/Activity	U-a	R-a	C-a	N-a	U-s	R-s	C-s	N-s
1	PS	PS	C	N	-	-	-	-
2	C	N	N	N	-	-	-	-
3	C	C	C	N	-	-	-	-
4	PS	PS	PS	PS	-	-	-	-
5	C	C	C	N	-	-	-	-
6	PS	-	-	-	-	-	-	-
7	PS	PS	PS	PS	-	-	-	-
8	C	C	C	N	-	-	-	-
9	C	C	C	N	-	-	-	-
10	-	-	-	-	PS	PS	PS	N
11	-	-	-	-	C	C	C	N
12	PS	PS	PS	N	PS	PS	PS	N
13	C	-	-	-	-	-	-	-
14	PS	PS	PS	PS	PS	PS	PS	PS

U-a: Urban Aquatic
R-a: Rural Aquatic
C-a: Conservation Aquatic
N-a: Natural Aquatic
U-s: Urban Shorelands
R-s Rural Shorelands
C-s: Conservation Shorelands
N-s: Natural Shorelands
P: Permitted Use
PS: Permitted with Standards
C: Conditional Use
N: Not allowed
"-": Not applicable

3. DREDGED MATERIAL DISPOSAL SITE DESIGNATIONS

It is important that local jurisdictions designate and reserve acceptable dredged material disposal sites listed in this plan. Absence of the designation may allow development at a site to occur before any dredged material disposal use, resulting in a reduction an available disposal capacity for necessary dredging projects. The general management responsibility of a local jurisdiction for its dredged material disposal sites is to prevent preemptory uses of the site prior to use for disposal. This responsibility is fulfilled through the implementation of ordinance procedures discussed in Sections 3.1 and 3.2, and the review procedures discussed in Section 4.

3.1 SITE PRIORITIES

Dredged material disposal sites have been ranked with one of two priorities. Priority 1 sites are essential to meet dredging needs over the next five years and should be reserved for dredged material disposal use. Priority 2 sites are necessary to meet the more probable long-term dredging needs, but their importance may or may not justify efforts to reserve them.

Local jurisdictions should adopt a priority system into their ordinance procedures, such that a higher priority site will be utilized before a lower priority site and development proposals can be reviewed under more restrictive criteria for Priority 1 than Priority 2 sites.

3.2 DREDGED MATERIAL DISPOSAL SITE RESERVATION

Practicality and zoning will protect many of the dredged material disposal sites identified in this plan: some sites cannot be developed at all without fill and the property owners at many of the Priority 1 sites would like to receive dredged materials. However, ownership and development plans can change; therefore, it is necessary to take some action to ensure dredged material disposal use at a given site prior to allowing a development which would prevent all future disposal at the site.

Local jurisdictions may use a combination of special zoning and limited freezing of development proposals to reserve dredged material disposal sites. Model ordinance language for an overlay zoning district for reserving dredged material disposal sites is given below. The language is based on provisions in Dredged Material Disposal Site Selection and Site Reservation Policy Number 5. This overlay district protects Priority 1 sites by not allowing uses which preempt dredged material disposal unless the site is removed from the dredged material disposal plan by

ordinance amendment. It protects Priority II sites by placing a 30-day freeze on preemptive development proposals to allow time for interested parties to negotiate for the use of the site for dredged material disposal.

Dredged Material Disposal Site Reservation Overlay District

Purpose. The intent of this district is to designate dredged material disposal sites in the County/City with respect to present and expected water-dependent development and navigational access requirements and to protect these sites for dredged material disposal operations.

District Boundaries. The dredged material disposal site reservation district conforms to the description of sites in the Dredged Material Disposal Element of the Comprehensive Plan (or Shoreline Master Program). Revisions to this district must be recorded by amendment to the Comprehensive Plan (or Shoreline Master Program).

Priority I Dredged Material Disposal Sites. The purpose of Priority I site designations is to protect important dredged material disposal sites from incompatible and preemptive uses that may limit their ultimate use for the deposition of dredged material, and to assure that an adequate number of sites will be reserved in order to accommodate dredged material disposal needs resulting from at least five years of existing and expected water-dependent development and navigation projects.

Uses allowed in Priority I Dredged Material Disposal Sites
Dredged material disposal at Priority I sites designated in the Plan is permitted. In addition, only those development uses and activities allowed in the underlying zone which are determined not to preempt the site's future use for dredged material disposal are allowed, subject to the policies and procedural requirements of the underlying zone.

Removal of Priority I Dredged Material Disposal Site Designation
Priority 1 sites may be removed by ordinance amendment to the Plan in the following situations:

1) After a Priority 1 dredged material disposal site has been filled to capacity and is no longer available for additional dredged material disposal, the dredged material disposal site designation shall be removed.

2) Removal of a Priority I dredged material disposal site designation before a site has been filled to capacity shall only be approved if:

   a) Provision is made for a replacement Priority I

dredged material disposal site of suitable characteristics; or

b) The dredging need for which the Priority I site was initially designated for dredged material disposal is withdrawn or reevaluated.

Priority II Dredged Material Disposal Sites.
The purpose of Priority II dredged material disposal site designations is to identify disposal areas necessary to meet probable long-term projected dredging needs. These sites may be required in the future to provide for disposal associated with long-range water-dependent development and navigational dredging needs. The importance of these sites, as compared with Priority I dredged material disposal sites, does not justify efforts to protect all or portions of each site from potential preemptive uses.

Uses Allowed in Priority II Dredged Material Disposal Sites
Dredged material disposal at Priority II sites designated in the Plan is permitted. In addition, development uses and activities allowed in the underlying zone are allowed, subject to the policies and procedural requirements of the zone. Allowable uses which will preempt use of the site for dredged material disposal shall be subject to the 30 day hold period indicated in "Site Reservation" below.

Site Reservation
When a valid development permit application is submitted for Planning Department or Planning Commission approval which entails use of a Priority II dredged material disposal site in a way which would be incompatible with or preempt use of the site for dredged material disposal, action on the application shall be suspended for 30 days from the date a complete application is filed. The period of suspension is to allow interested parties time to negotiate for use of the site as a dredged material disposal area. If negotiations are not completed within the 30 day hold period, the development application will be reviewed in accordance with normal procedures.

Preemptive Uses
Incompatible and preemptive use of Priority 1 and Priority II dredged material disposal sites includes the following:

1) Uses requiring substantial structural or capital improvements (e.g., construction of permanent buildings);

2) Uses that require extensive alteration of the topography of the site, thereby reducing the potential usable volume of the dredged material disposal area (e.g., extensive site grading, elevation by placement of fill materials other than dredged spoils).

3) Uses that include changes made to the site that would prevent expeditious use of the site for dredged material disposal. Such uses would delay deposition of dredged materials on the site beyond the period of time commonly required to obtain the necessary federal, state and local dredging and spoil disposal permits (approximately 90 days).

4. PLAN IMPLEMENTATION

4.1 LOCAL JURISDICTION REVIEW

There are three situations where a local jurisdiction must review dredging or disposal issues: dredging within the jurisdiction, disposal within the jurisdiction, or a development proposal for a designated disposal site. Local land-use permits or consistency reviews are required for all three situations. The first two are also reviewed in the state and federal permit processes.

At the local level, dredging, dredged material disposal, and the intended use of the dredged area should be reviewed for consistency with the policies, standards, and other requirements of the comprehensive plan or shoreline master program. Non-federal dredging and dredged material disposal should be reviewed through the established permit process of the local jurisdictions. Federal projects should be reviewed through the consistency review procedures set forth in the Coastal Zone Management Act. This act states that federal projects which directly affect the Coastal Zone must be consistent "to the maximum extent practicable" with the State's Coastal Zone Management Program. To demonstrate consistency, the Federal agency should submit a written determination to the affected state which demonstrates how the federal action complies with each of the applicable requirements set forth in the local comprehensive plan or shoreline master program. The affected state and local jurisdiction should review the consistency determination to check for compliance with their plan.

In addition to reviewing for consistency with policies and standards, the local jurisdiction should be able to encourage early use of dredged material disposal sites that should be used first. The basic tools for this action include using the site priority system to evaluate complete consistency of the proposal and negotiation with the dredging project sponsor.

A development may be proposed at a dredged material disposal site, and there may be no zoning or code objection other than the fact that the site should be used for dredged material disposal first. In such circumstances, local jurisdictions should follow the procedures stated in Section 3.2.

4.2 STANDARD CONDITIONS

When permitting dredging or dredged material disposal, local jurisdictions will need to add conditions to the permits or consistency reviews to ensure that policies and standards are adhered to. They should also monitor the project and, if neces-

sary, enforce compliance with the conditions. This section provides lists of standard conditions that should accompany approval for disposal. The site inventory (Section 6) includes additional special conditions for use of many of the sites. When issuing approval for use of any of the designated sites, the local jurisdiction should apply the standard conditions given below as well as the special conditions included in the site inventory. Local jurisdictions will need to determine on a case-by-case basis which of the conditions listed in this plan are germane to each proposed project and whether or not additional conditions will be needed to permit the project.

4.2.1 Land Disposal Conditions

1) The timing of dredging and dredged material disposal shall be coordinated with state and federal resource agencies, local governments, and private interests to protect estuarine aquatic and shoreland resources, minimize interference with recreational fishing and commercial fishing operations, including the removal of snags from organized gillnet drifts, and insure proper flushing of sediment and other materials introduced into the water by the project. (Note: this condition may be combined with special timing restrictions given for individual disposal sites).

2) The disposal site shall be revegetated as soon as conditions allow. Site revegetation shall be coordinated with the U.S. Army Corps of Engineers, Soil Conservation Service, Division of State Lands, (Oregon Projects), Oregon Department of Fish and Wildlife (Oregon Projects), and the Washington Departments of Game and Ecology (Washington Projects). (Note: this condition may not apply to sites intended for development or further dredged material disposal use within 2 years or where habitat management plans agreed upon by local, state, and federal agencies specify that open sand areas should remain at the site.)

3) Containment dikes shall be prepared with material obtained from within the dredged material disposal site or other source approved by local, state, and federal regulatory agencies.

4) After disposal has been completed, the project sponsor shall report the volume of material placed at the site.

4.2.2 In-Water Disposal Conditions

1) The timing of dredging and dredged material disposal shall be coordinated with state and federal resource agencies, local governments, and private interests to protect estuar-

ine aquatic and shoreland resources, minimize interference with recreational fishing and commercial fishing operations, including the removal of snags from organized gillnet drifts, and insure proper flushing of sediment and other materials introduced into the water by the project. (Note: this condition may be combined with special timing restrictions given for individual disposal sites).

2) Prior to undertaking disposal, sediments shall be tested in accordance with state and federal water quality standards and certified as suitable for in-water disposal.

3) After disposal has been completed, the project sponsor shall report the volume of material placed at the site.

Additional Condition for Flow-lane Disposal and Estuarine Open-water Disposal Only

4) Prior to undertaking disposal, a monitoring program designed to test whether or not the disposal is adversely affecting estuarine resources shall be established and agreed upon by local, state, and federal agencies. The project sponsor shall conduct the monitoring as specified in the program.

5) Prior to undertaking disposal, the project sponsor shall consult with the Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, the State Fishery agency (and the drift captain if the disposal site or dredging area is within an organized gillnet drift) to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

Additional Conditions for Beach Nourishment Only

6) The beach shall be graded at a slope greater than 11 horizontal to 1 vertical and less than 3 horizontal to 1 vertical and contoured to minimize juvenile fish stranding and hazards to beach users.

7) Prior to undertaking disposal, the project sponsor shall establish the beach's historic profile in coordination with local, state and federal agencies. Dredged material shall not be placed waterward of the beach's historic profile.

4.3 TRACKING THE USE OF DISPOSAL SITES

In order to effectively implement and periodically update the Dredged Material Management Plan, the amount of material placed in each disposal site must be monitored. Local jurisdictions should require that dredging and disposal permit applicants report the amount of material actually disposed of. Sponsors of on-going projects, such as Corps of Engineers maintenance dredging, should periodically report disposal volumes and sites to

affected local jurisdictions or to CREST. CREST will compile records of all dredged material disposal in the estuary area in order to assist local jurisdictions in plan implementation and update.

4.4 REGIONAL COORDINATION

Dredged material disposal planning, plan update, and project review should be undertaken at the regional level. The importance of regional dredged material management stems from two significant problems: dredging and disposal in one jurisdiction may affect other jurisdictions and dredging projects and their related disposal sites are not always located within the same jurisdiction.

It is essential that large projects such as federal navigation channel maintenance are reviewed at a regional level. CREST will assist in this regional review by helping local jurisdictions review dredging permits and federal consistency determinations in the context of a regional Dredged Material Management Plan and by monitoring and periodically updating the Plan.

5. DREDGING PROJECTS IN THE COLUMBIA RIVER ESTUARY

Existing and potential dredging projects in the estuary are summarized in Table 7. The table presents projected 5-year dredging volumes and relates the projects to the disposal sites listed and mapped in the next section.

Dredging projects in the estuary are performed by the federal government, ports, local governments, private developers, and diking districts. The U.S. Army Corps of Engineers maintains the Columbia River Entrance, Columbia River Main Navigation Channel, Baker Bay West Channel (16 foot channel to Ilwaco), Chinook Channel, Hammond Boat Basin Entrance Channel, Skipanon Channel, and Skamokawa Creek Channel in the Columbia River Estuary. Local ports and governments dredge adjacent to port docks, in boat basins, and waterward of boat ramps. Private developers currently do relatively little dredging in the estuary; however, there are large potential dredging needs in areas that are well suited and designated for water-dependent development. These areas include Tansy Point, the east and west banks of the Skipanon River, Tongue Point, Bradwood, and Wauna in Oregon, and Deep River and Elochoman Slough in Washington. Several diking districts in the estuary repair their dikes by dredging adjacent to the repair site and placing the material directly on the dikes. This is necessary because most of the dikes in the estuary area are not accessible to heavy land-based earth moving equipment.

The list of dredging projects is not intended to be a regulatory part of the Plan. Projects other that those listed can be proposed and approved. Dredging volumes can vary from the cubic yardages listed. In most cases, the sites listed are not restricted to the project with which they are associated. Instances where a site is reserved for a specific project are identified in the site inventory (Section 6).

Table 7. Existing and Potential Dredging Projects in the Estuary

Project	Cubic Yardage x 1,000	Disposal Sites
Corps Navigation Channel Projects		
Columbia River Bar*	7,000/yr 35,000/5 yr	Ocean Sites CC-E-8.5
Desdemona Shoals	32/yr 160/5yr	CC-E-8.5
Flavel Shoal	500/yr 2,500/5yr	CC-E-8.5 Wa-S-10.9
Upper Sands Shoal	46.4/yr 232/5yr	CC-E-21.0 CC-E-8.5
Tongue Pt. Crossing Shoal	242/yr 1,210/5yr	CC-E-21.0 CC-E-8.5
Miller Sands Bars	355/yr (hopper) 495/yr (pipeline) 850/5yr (total) 4,250/5yr (total)	CC-E-21.0 CC-S-23.5 CC-B-23.1 Wk-S-21.2/ CC-S-21.2
Pillar Rock Bar	137/yr (hopper) 248/yr (pipeline)	flow lane CC-E-21.0 CC-S-27.2 CC-B-27.2 Wk-S-21.2 CC-S-21.2

* These figures are based on 1984, 1985 and 1986 dredging volumes. They are higher than average because the bar was deepened at that time. The volumes are expected to drop to 4 to 5 million cubic yards per year by 1989 or 1990.

Table 7 continued.

Project	Cubic Yardage x 1,000	Disposal Sites
	385/yr (total) 1,925/5yr (total)	
Brookfield-Welch Island Bars	21/yr (hopper) 30/yr (pipeline) 51/yr (total) 255/5yr (total)	flow lane
Skamokawa Bars	200/yr (hopper) 100/yr (pipeline) 300/yr (total) 1,500/5yr (total)	flow lane CC-B-36.8
Puget Island Bar	90/yr (hopper) 264/yr (pipeline) 354/yr (total) 1,770/5yr (total)	flow lane CC-B-36.8 CC-S-38.3 CC-B-38.3 CC-S-38.9 Wk-B-38.7 Wk-S-38.4 Wk-B-38.8
Wauna and Lower Westport Bars	94/yr (hopper) 214/yr (pipeline) 308/yr (total) 1,540/5yr (total)	flow lane CC-B-44.0 CC-S-42.9 Wk-B-40.8 Wk-B-40.9 Wk-B-43.8 Wk-S-41.8 Wk-B-41.3 Wk-S-42.5 Wk-B-42.4
Westport Bars	208/yr (hopper) 541/yr (pipeline)	flow lane Wk-B-45.0 Wk-S-45.0 Wk-B-46.3

Table 7 continued.

Project	Cubic Yardage x 1,000	Disposal Sites
		Wk-S-46.3 sites in Columbia County
	749/yr (total) 3,745/5yr (total)	
Eureka Bar	45/yr 225/5yr	flow lane Wk-B-51.8
Baker Bay West Channel	13/yr (hopper) 100/yr (pipeline) 113/yr (total) 565/5yr (total)	CC-E-8.5 Pa-S-3.0 CC-S-3.1
Chinook Channel (maintenance)	34/yr (hopper) 63/yr (pipeline) 97/yr (total) 485/5yr (total)	CC-E-8.5 CC-B-5.8 CC-S-6.8 Pa-S-8.8
Chinook Channel (realignment)*	?/yr	CC-B-5.8 CC-S-6.8 Pa-S-8.1 Pa-S-8.9
Skipanon Channel	60/yr (hopper) 48/yr (pipeline) 108/yr (total) 540/5yr (total)	CC-E-8.5 WA-S-10.1 WA-S-10.5 WA-S-10.9

* The Corps of Engineers is currently examining possible ways to decrease maintenance costs in Chinook Channel. Realigning the channel may be considered as one of several possible solutions. As of the date of this Plan the Corps has not made a decision on the possibility of a channel realignment.

Table 7 continued.

Project	Cubic Yardage x 1,000	Disposal Sites
Skamokawa Creek	20/5yr	Wk-B-33.4
Ports; Boat Basins; Boat Ramps		
Ilwaco Boat Basin	10/5yr	Pa-S-3.2
Chinook Boat Basin	20/yr	Pa-S-8.8
		Pa-S-8.9
	100/5yr	
Hammond Boat Basin Maintenance	20/yr	Ha-S-8.0
		Ha-S-7.9
		Flow lane
	100/5yr	
Hammond Boat Basin Expansion	272.5/5yr	Ha-S-7.6
		Flow lane
Warrenton Boat Basin	minimal	Wa-S-10.1
		Wa-S-10.5
		Wa-S-10.9
Port of Astoria Slips and Dock Face	125/yr	Flow lane
		CC-E-8.5
		CC-S-24.0
		Wa-S-11.7
		Wa-S-11.8
		Wa-S-11.9
		Wa-S-12.1
		Wa-S-12.5
		Wa-S-12.6
	625/5yr	
East Mooring Basin	minimal	As-S-16.3
West Mooring Basin	4/yr	As-S-16.3
		CC-S-24.0
		Wa-S-11.7

Table 7 continued.

Project	Cubic Yardage x 1,000	Disposal Sites
		Wa-S-11.8 Wa-S-11.9 Wa-S-12.1 Wa-S-12.5 Wa-S-12.6
	20/5yr	
Cathlamet Boat Basin	minimal	Wk-S-38.1
Tongue Point Coast Guard Dock	2/yr	CC-S-24.0 As-S-16.3
	10/5yr	
Skipanon Boat Ramp	minimal	Wa-S-10.5 Wa-S-10.9 Upland fill sites
Astoria Yacht Club Boat Ramp	minimal	Upland fill sites
John Day Boat Ramp	minimal	CC-S-18.8
<u>Water - Dependent Development and Other Projects</u>		
Tansy Point Development	250 (construction) 13.25/yr (maintenance)	Flow lane Wa-S-9.4 on-site fill
	66.25/5yr (maintenance)	
West Bank Skipanon Development	200 (construction) 75/yr (maintenance)	Wa-S-10.5 Wa-S-10.7 on-site fill

Table 7 continued.

Project	Cubic Yardage x 1,000	Disposal Sites
	375/5yr (maintenance)	
East Bank Skipanon Development	500 (construction) 86/yr (maintenance)	Wa-S-9.4 on-site fill
	430/5yr (maintenance)	
Astoria Oil Services Tongue Point Barge Slip	40 (construction)	As-S-18.2
AMCCO Basin	2/5yr	CC-S-12.9
Lewis and Clark River Log Sort Yard	10/yr 50/5yr	CC-S-12.7
Youngs Bay and River and Lewis and Clark Entrance	12.5/5yr	Wa-S-11.7 Wa-S-11.8 Wa-S-11.9 Wa-S-12.1 Wa-S-12.5 Wa-S-12.6
Tongue Point Development (Channel & turning basin sizes based on 1981 CREST Mediation Agreement)		
-500 X 40 foot entrance channel	750 (construction) 15/yr (maintenance)	As-S-18.2 As-S-18.7 As-S-18.6 CC-S-19.0 CC-S-24.0
	75/5yr (maintenance)	
-700 x 40 foot channel adjacent to pier slips	3,000 (construction) 20/yr (maintenance)	As-S-18.2 As-S-18.7 CC-S-18.6 CC-S-19.0 CC-S-24.0
	100/5yr (maintenance)	

Table 7 continued.

Project	Cubic Yardage x 1,000	Disposal Sites
-100 X 25 foot turning basin	600 (construction) 20/yr (maintenance) 100/5yr (maintenance)	As-S-18.2 As-S-18.7 CC-S-18.6 CC-S-19.0 CC-S-24.0
-500 X 25 foot access channel to South Tongue Point	750 (construction) 20/yr (maintenance) 100/5yr (maintenance)	As-S-18.2 As-S-18.7 CC-S-18.6 CC-S-19.0 CC-S-24.0
- Pier slips	1,000 (construction) 150/5yr (maintenance)	As-S-18.2 As-S-18.7 CC-S-18.6 CC-S-19.0 CC-S-24.0
Bradwood Development	50/5yr	CC-S-38.9
Wauna (maintenance)	3.9/yr 19.5/5yr	on-site fill
Elochoman Slough Log Sort Yard	2/yr 10/5yr	Wk-S-36.9 Cottonwood Is.
Deep River	80/yr 400/5yr	Wk-S-20.7 Wk-S-21.1 Dike top Sites
Grays Bay	50/yr 250/5yr	Wk-S-20.7 Wk-S-22.4 Dike top sites

Table 7 continued.

Project	Cubic Yardage x 1,000	Disposal Sites
Grays River	82/yr 410/5yr	Wk-S-22.9 Wk-S-22.4 Dike top sites
Brooks Slough	6/yr 30/5yr	Dike top sites
Elochoman Slough	4/yr 20/5yr	Wk-S-36.9 Cottonwood Is.
Welcome Slough	unknown	Wk-S-41.2
Westport Slough	unknown	CC-S-42.9

6. DREDGED MATERIAL DISPOSAL SITE INVENTORY

Dredged Material disposal sites reviewed and designated in this plan are listed in the following inventory. The inventory includes all sites required to accommodate anticipated five-year disposal needs and many sites suitable for meeting longer term disposal requirements. The sites should be designated in Local Comprehensive Plan (Oregon) and Shoreline Master Programs (Washington). Appendix B lists additional sites that may be suitable for receiving dredged materials but present significant environmental, engineering, or land-use constraints on their use. The inventory in Appendix B provides information on sites that may be considered in the future; however, as of the writing of this plan, these sites are not suitable for designation in Comprehensive Plans or Shoreline Master Programs.

The following inventory includes all types of currently utilized dredged material disposal sites in the estuary area except for flow-lane, ocean and dike top disposal sites. Rather than identifying specific flow-lane sites, a general area suitable for flow-lane disposal was identified. This area encompasses the main Columbia River Navigation Channel plus a 600-foot wide strip along each side of the channel. Individual flow-lane disposal sites within this area will be chosen prior to each dredging project based on the policies and standards applicable to flow-lane disposal. Ocean disposal sites are designated by EPA. Although they are not described or mapped in this plan, use of ocean sites must comply with the plan's policies and standards. The EPA designated sites should be incorporated into local plans. Dike top disposal is undertaken primarily for the purpose of maintaining and reinforcing dikes. In Oregon, an exception to Statewide Planning Goal 16 identifies dikes which can be maintained with dredged material.

The information included in the following inventory consists of a standardized description of each site and site maps. Portions of each description are intended to provide planning information only while other portions are intended to be regulatory. A dredged material disposal proposal must comply with the regulatory portions but need not comply with the informational items. The standardized descriptions explained below indicate which items are informational and which are regulatory.

Site #: (informational) The site number code is set up as follows:

Planning Jurisdiction	_	Type of Disposal Site	_	Approximate Columbia River Mile

Jurisdiction Abbreviations:

- Pa - Pacific County
- Wk - Wahkiakum County
- CC - Clatsop County
- Ha - Town of Hammond
- Wa - City of Warrenton
- As - City of Astoria

Disposal Site Abbreviations

S - Shoreland (includes upland)
B - Beach Nourishment
E - Estuarine in-water (includes estuarine open water and sump disposal)

Previous Number or Name: (informational) This heading lists past identifying numbers given to sites in the 1979 CREST Plan, local comprehensive plans and shoreline master programs, or Corps of Engineers documents.

Local Jurisdiction: (regulatory) The local jurisdiction is the local government that has regulatory jurisdiction over the site.

Local Zoning Designation: (regulatory) This gives the site's zoning.

Site Priority: (regulatory) This designates the sites priority based on Dredged Material Disposal Site Selection Policy number 5.

Ownership: (informational) The site ownership is given as either federal, state, county, city, port district, or private.

Acreage: (informational) The approximate acreage of the site as depicted on the maps is included under this heading.

Capacities: (informational) The total capacity is the approximate cubic yard volume of the site based on surface area and disposal height. In cases where the site has been used in the past, the amount of spoils previous placed at the site is given, along with the site's remaining capacity.

Related Projects: (informational, except where noted in the site description) This heading lists the dredging project(s) for which the disposal site is designated. The projects are cross referenced with dredging needs and disposal sites in the previous section.

Distance to Projects: (informational) This heading gives a range of distances representing the distance between the disposal site and the nearest portion of the dredging project and the distance between the disposal site and the farthest portion of the dredging project.

Environmental, Engineering, and Land Use Issues: (regulatory) The major environmental, engineering, and land use issues that must be addressed prior to obtaining approval to use the site are listed under this heading.

Special Conditions on Use: (regulatory) This list gives regulatory conditions which ensure that the major issues are addressed. These should be attached to the local permit or federal consistency review for the site, along with the general condi-

tions given in Section 4.2.

The disposal site maps for each jurisdiction follow the site descriptions (Figures 3-7). In addition, a general index map is included which depicts all of the sites in the estuary (Figure 2).

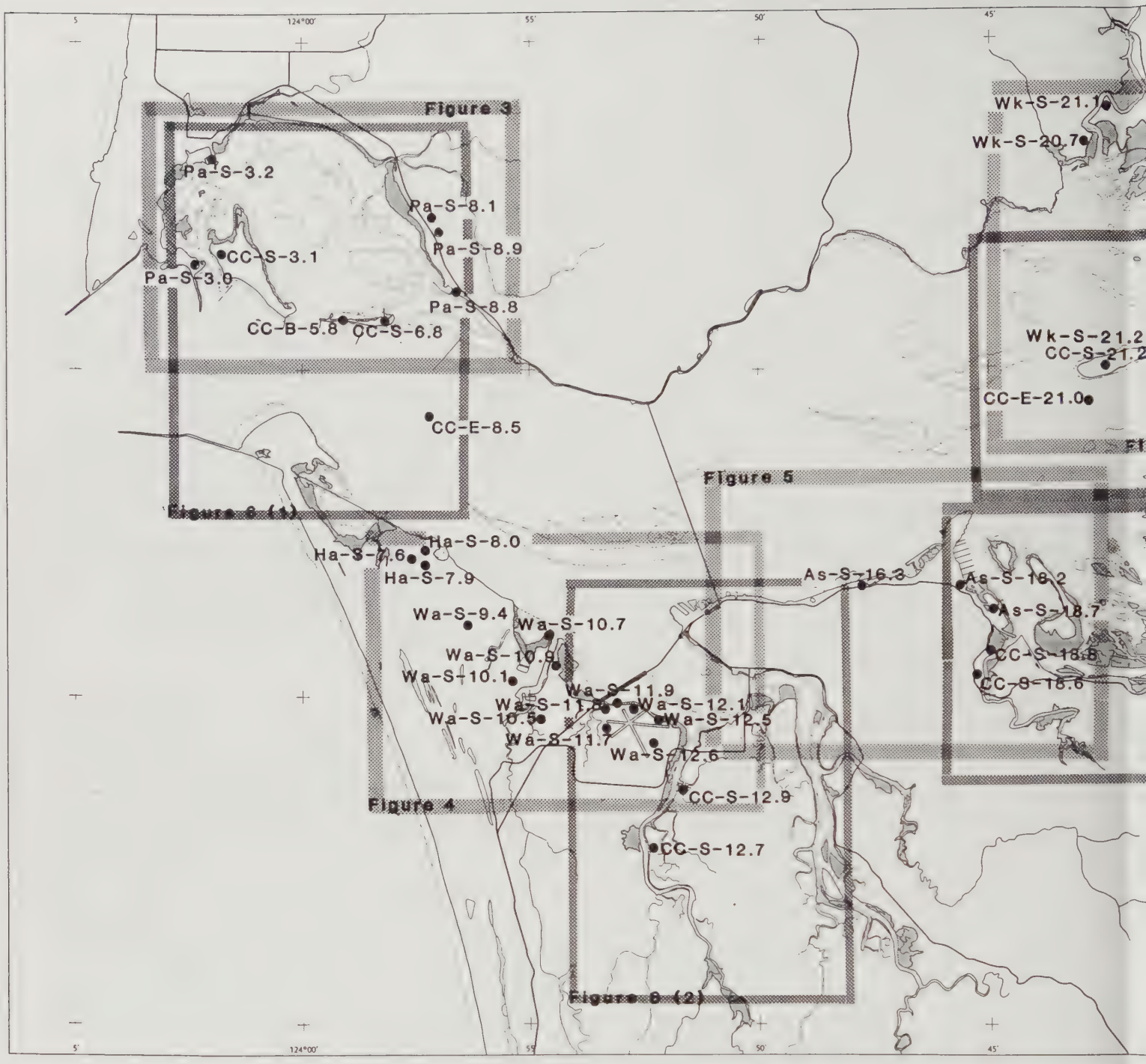
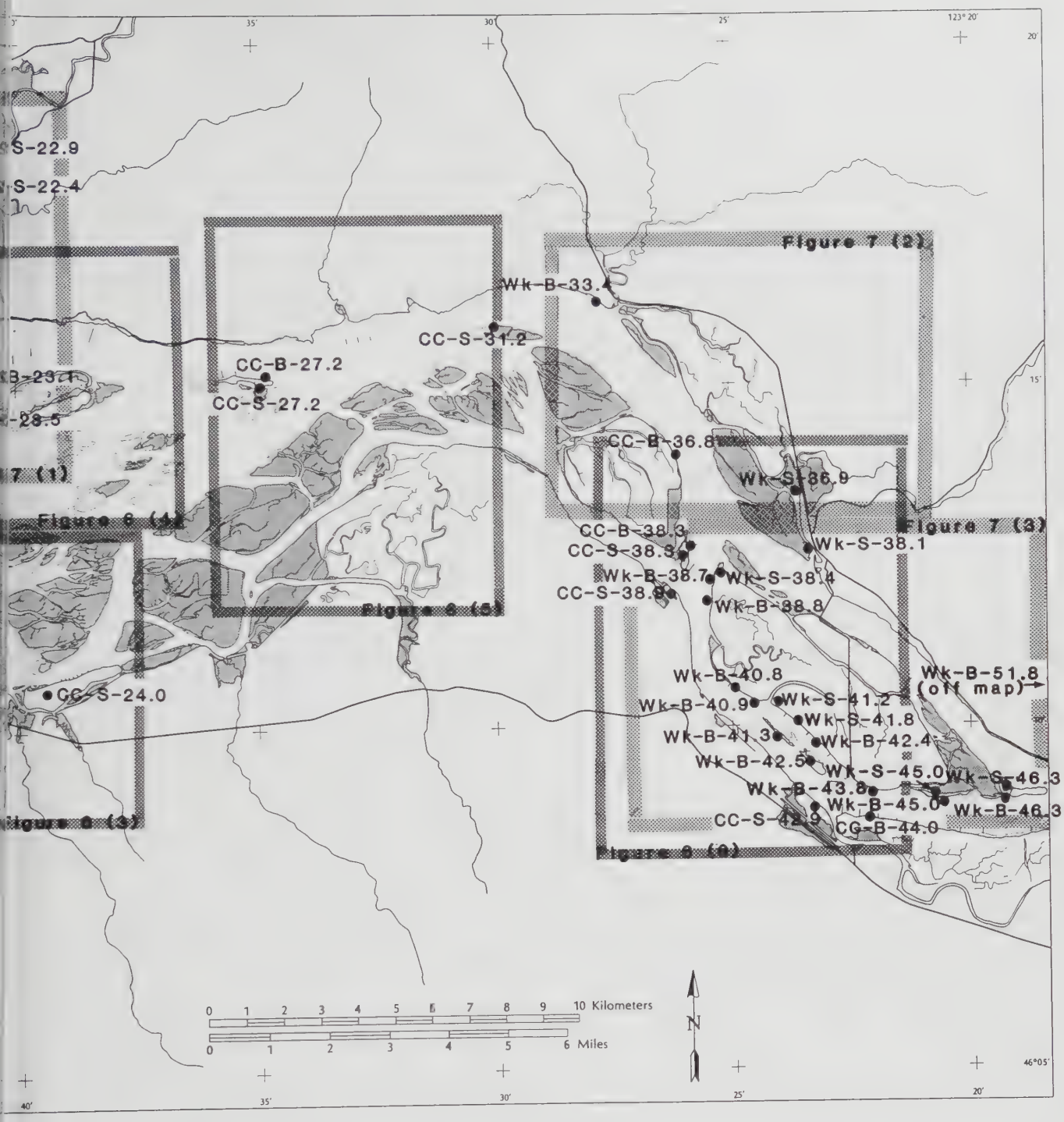


Figure 2

Dredged Material Disposa



tes Index Map

6.1 PACIFIC COUNTY SITES

Site Number: Pa-S-3.0 (see Figure 3)

Previous Number or Name: 2(S) - CREST Plan and Pacific Co. Shoreline Master Program
Local Jurisdiction: Pacific County
Local Zoning Designation: Conservation Shorelands (C-s)
Site Priority: 1
Ownership: Federal
Acreage: 26.1 acres
Total Capacity: 420,000 cubic yards at 10' above existing ground elevation
Amount of Spoils from 1979 through June 1986: None
Remaining Capacity: 420,000 cubic yards
Related Projects: Baker Bay West Channel
Distance to Projects: 1,250 to 10,500 feet

Environmental, Engineering, and Land Use Issues

Sequence of Site Use: This site should be used after CC-S-3.1 is filled to capacity.

Site Number: Pa-S-3.2 (see Figure 3)

Previous Number or Name: 1(S) - CREST Plan; Pacific County Shoreline Master Program
Local Jurisdiction: Pacific County
Local Zoning Designation: General Development Shorelands (D-s)
Site Priority: 1
Ownership: Port of Ilwaco
Acreage: 10.7 acres
Total Capacity: Stockpile for reuse; can handle 17,000 cuyd/yr or 85,000 cuyd/5yr
Related Projects: Port of Ilwaco Boat Basin
Distance to Projects: 400 - 1,200 feet

Environmental, Engineering, and Land Use Issues

Stockpiling: The site is intended to act as a stockpile for eventual removal of the dredged material for construction fills or other uses.

Site Number: Pa-S-8.1 (see Figure 3)

Previous Number or Name: none
Local Jurisdiction: Pacific County
Local Zoning Designation: Unzoned

Site Priority: 2
Ownership: Washington State University
Acreage: 143 acres
Total Capacity: 2,300,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 2,300,000 cubic yards
Related Projects: Chinook Channel realignment
Distance to Projects: 7,500 - 11,500

Environmental, Engineering, and Land Use Issues

Impacts to Chinook River: Upon reviewing similar sites resource agencies have stipulated that the brackish water dredge discharge from Baker Bay not be allowed to flow into Chinook River. Runoff from the site will have to be drained directly into Baker Bay.

Drainage from the Disposal Site: Because the site is located shoreward of a road, runoff from the disposal will need to flow to and under the road through drainageways and culverts prior to entering the main waterway. Existing culverts and drainageways may not be adequate to handle the runoff from a hydraulic dredging operation. The project sponsor must either demonstrate that the existing drainage system is adequate or install an adequate drainage system prior to undertaking disposal.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Washington Department of Game prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Ownership: As of the writing of this plan, the site owner has not expressed interest in receiving dredged materials on the property.

Comment: Pa-S-8.1 is a low priority site reserved primarily for a potentially very large project such as Chinook Channel realignment. Use of the site would entail overcoming engineering problems (see above) and economic concerns related to the distance from the dredging area, and may

involve property acquisition by the project sponsor.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The project sponsor shall demonstrate that the existing drainageways and culverts are adequate to carry the runoff associated with the dredging operation from the disposal site to the main waterway. If the existing drainage system is not adequate, the project sponsor shall submit a proposal for increasing its capacity. All necessary approvals from property owners, road departments, and other agencies must be obtained prior to altering or installing drainageways and culverts.

2) The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Department of Game to determine methods of reducing potential impacts to bald eagles.

3) Drainage from the dredged material disposal site shall be routed so as not to enter Chinook River.

Site Number: Pa-S-8.8 (see Figure 3)

Previous Number or Name: 10(S) - CREST Plan; Pacific County Shoreline Master Program
Local Jurisdiction: Pacific County
Local Zoning Designation: Water Dependent Development Shorelands (WD-s)
Site Priority: 1
Ownership: Port of Chinook
Acreage: 3 acres
Total Capacity: 20,000 cubic yards at 4 feet above existing elevation
Amount of Spoils Prior to June 1986: Several thousand cubic yards
Remaining Capacity: Depends on amount removed for reuse
Related Projects: 1) Port of Chinook; 2) Chinook Channel
Distance to Projects: 1) 200 - 1,250 feet; 2) 2,900 - 6,250 feet

Environmental, Engineering, and Land Use Issues

Stockpiling: The site is intended to act as a stockpile for eventual removal of the dredged materials for construction fills or other uses.

Site Number: Pa-S-8.9 (see Figure 3)

Previous Number or Name: 9(S) - CREST Plan
Local Jurisdiction: Pacific County
Local Zoning Designation: Rural Shorelands (R-s)
Site Priority: 2
Ownership: Private
Acreage: 15.3 acres
Total Capacity: 250,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 250,000 cubic yards
Related Projects: 1)Chinook Channel; 2)Chinook Boat Basin
Distance to Projects: 1) 3,500 - 7,500 feet; 2) 5,000 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 permit jurisdiction. Prior to undertaking disposal, the Corps of Engineers must be consulted to determine if the site contains wetlands within their regulatory jurisdiction. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer, or obtain Federal approval to fill the wetlands. The Federal agency may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Impacts to Chinook River: Upon reviewing similar sites resource agencies have stipulated that the brackish water dredge discharge from Baker Bay not be allowed to flow into Chinook River. Runoff from the site will have to be drained directly into Baker Bay.

Drainage from the Disposal Site: Because the site is located shoreward of a road, runoff from the disposal will need to flow to and under the road through drainageways and culverts prior to entering the main waterway. Existing culverts and drainageways may not be adequate to handle the runoff from a hydraulic dredging operation. The project sponsor must either demonstrate that the existing drainage system is adequate or install an adequate drainage system prior to undertaking disposal.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required

to consult with the U.S. Fish and Wildlife Service and Washington Department of Game prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Ownership: As of the writing of this plan, the site owner has not expressed interest in receiving dredged materials on the property.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

2) Drainage from the dredged material disposal site shall be routed so as not to enter Chinook River.

3) The project sponsor shall demonstrate that the existing drainageways and culverts are adequate to carry the runoff associated with the dredging operation from the disposal site to the main waterway. If the existing drainage system is not adequate, the project sponsor shall submit a proposal for increasing its capacity. All necessary approvals from property owners, road departments, and other agencies must be obtained prior to altering or installing drainageways and culverts.

4) The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Department of Game to determine methods of reducing potential impacts to bald eagles.

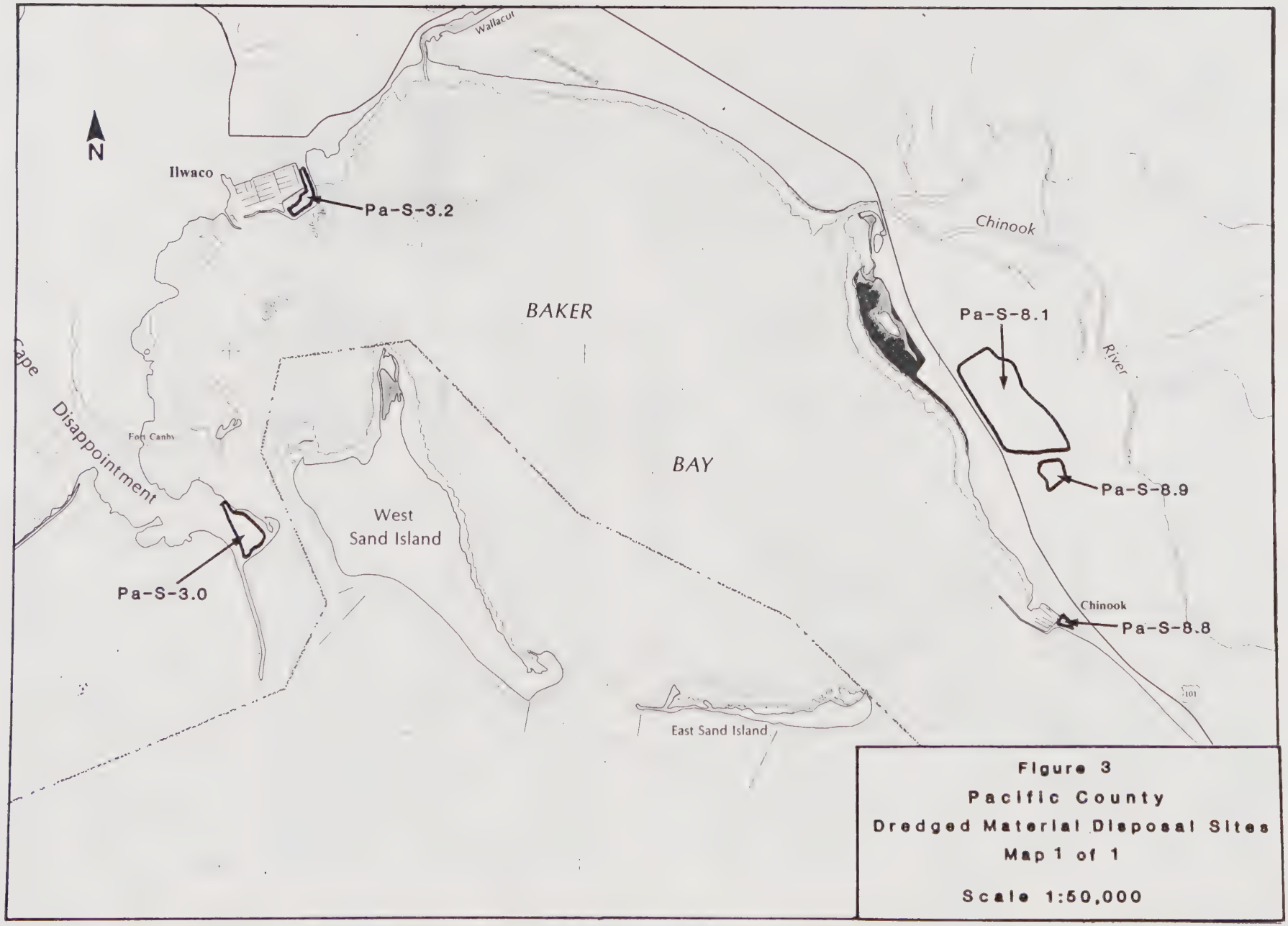


Figure 3
Pacific County
Dredged Material Disposal Sites
Map 1 of 1

Scale 1:50,000

6.2 HAMMOND SITES

Site Number: Ha-S-7.6 (see Figure 4)

Previous Number or Name: 12(S) - CREST Plan; Hammond Plan
Local Jurisdiction: Hammond and Clatsop County
Local Zoning Designation: Recreation Commercial (RC) - Hammond; Recreation Management (RM) - Clatsop County
Site Priority: 2
Ownership: Federal
Acreage: 9.5 acres
Total Capacity: 150,000 cubic yards at 10' above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 150,000 cubic yards
Related Projects: Hammond Boat Basin Expansion
Distance to Projects: 800 - 1,600 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Owner Coordination: A Coast Guard station is adjacent to the southern portion of the site. Use of the site should not interfere with the station. The northern portion of the site is within Fort Stevens State Park. Disposal at the site will need to be coordinated with the Coast Guard and Fort Stevens State Park.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or

obtain the necessary Corps and DSL permits to fill the wetlands.

2) The project sponsor shall coordinate site preparation and disposal plans with Coast Guard and Fort Stevens State Park representatives.

Site Number: Ha-S-7.9; Ha-S-8.0 (see Figure 4)

Previous Number or Name: 14(S), 13(S) - CREST Plan; Hammond Plan
Local Jurisdiction: Hammond
Local Zoning Designation: Recreational Commercial (RC)
Site Priority: 1
Ownership: Federal
Acreage: 6 total
Total Capacity: 145,000 cubic yards at 15 feet above existing ground elevation
Amount of Spoils Prior to June 1986: approximately 100,000 cubic yards
Remaining Capacity: 45,000 cubic yards at 5 feet above existing disposal level
Related Projects: Hammond Boat Basin
Distance to Projects: 400 - 1,250 feet

Environmental, Engineering, and Land Use Issues

Limited Site Capacity: The sites are nearly filled to capacity. Once they are filled, material dredged from the boat basin should be either disposed of in the flow-lane or on site Ha-S-7.6.

6.3 WARRENTON SITES

Site Number: Wa-S-9.4 (see Figure 4)
Previous Number or Name: 17(S) - CREST Plan; Warrenton Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Water-Dependent Industrial (I3); Intermediate Density Residential (R10)
Site Priority: 2
Ownership: Private
Acreage: 26
Total Capacity: 420,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 420,000 cubic yards
Related Projects: Tansy Point Development
Distance to Projects: 1,700 - 2,000 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Water-Dependent Industrial Zoning: Portions of the site are zoned for water-dependent industrial development. The project sponsor must demonstrate that the dredged material disposal will not preclude present or future water-dependent use at the site.

Ownership: As of the writing of this plan, the site owner has not expressed interest in receiving dredged materials on the property.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) Prior to undertaking dipsosal, the project sponsor shall demonstrate that the placement of dredged material at the site will not preclude present or future water-dependent use.

Site Number: Wa-S-10.1 (see Figure 4)

Previous Number or Name: 22(S) - CREST Plan; Warrenton Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Light Industrial (I-1); High Density Residential (RH)
Site Priority: 1
Ownership: Private
Acreage: 15 acres
Total Capacity: 240,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 240,000 cubic yards
Related Projects: 1) Skipanon Channel; 2) Warrenton Boat Basin; 3) W. Bank Skipanon Development
Distance to Projects: 1) 400 - 5,400 feet; 2) 1,250 - 2,000 feet; 3) 5,000 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site

boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Drainage from the Disposal Site: Because the site is located shoreward of a road, runoff from the disposal will need to flow to and under the road through drainageways and culverts prior to entering the main waterway. Existing culverts and drainageways may not be adequate to handle the runoff from a hydraulic dredging operation. The project sponsor must either demonstrate that the existing drainage system is adequate or install an adequate drainage system prior to undertaking disposal.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The project sponsor shall demonstrate that the existing drainageways and culverts are adequate to carry the runoff associated with the dredging operation from the disposal site to the main waterway. If the existing drainage system is not adequate, the project sponsor shall submit a proposal for increasing its capacity. All necessary approvals from property owners, road departments, and other agencies must be obtained prior to altering or installing drainageways and culverts.

Site Number: Wa-S-10.5 (see Figure 4)

Previous Number of Name: 24(S) - CREST Plan, Warrenton Plan
Local Jurisdiction: Warrenton

Local Zoning Designation: Intermediate Density Residential (R10)
Site Priority: 2
Ownership: Private
Acreage: 70 acres
Total Capacity: 1,130,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 1,130,000 cubic yards
Related Projects: 1) Skipanon Channel; 2) Warrenton Boat Basin; 3) E. & W. Bank Skipanon development; 4) Skipanon Boat Ramp
Distance to Projects: 1) 2,000 - 7,500 feet; 2) 800 - 1,250 feet; 3) 7,100 feet; 4) 2,000 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Drainage from the Disposal Site: Because the site is located shoreward of a road, runoff from the disposal will need to flow to and under the road through drainageways and culverts prior to entering the main waterway. Existing culverts and drainageways may not be adequate to handle the runoff from a hydraulic dredging operation. The project sponsor must either demonstrate that the existing drainage system is adequate or install an adequate drainage system prior to undertaking disposal.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The project sponsor shall demonstrate that the existing drainageways and culverts are adequate to carry the runoff associated with the dredging operation from the disposal site to the main waterway. If the existing drainage system is not adequate, the project sponsor shall submit a proposal for increasing its capacity. All necessary approvals from property owners, road departments, and other agencies must be obtained prior to altering or installing drainageways and culverts.

Site Number: Wa-S-10.7 (see Figure 4)

Previous Number or Name: 20a(S) CREST Plan; Warrenton Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Water Dependent Industrial (I3)
Site Priority: 2
Ownership: Private
Acreage: 4.8 acres
Total Capacity: 39,000 cubic yards at 5 feet above existing ground elevation
Amount of Spoils from 1979 to June 1986: none
Remaining Capacity: 39,000 cubic yards
Related Projects: West Bank Skipanon Development
Distance to Projects: 100 - 2,900 feet

Environmental, Engineering, and Land Use Issues

Site Elevation: The site may be too high for use by pipeline or clamshell dredging. It is suitable for receiving trucked-in material.

Water-Dependent Industrial Zoning: Portions of the site are zoned for water-dependent industrial development. The project sponsor must demonstrate that the dredged material disposal will not preclude present of future water-dependent use at the site.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following;

1) Prior to undertaking disposal, the project sponsor shall demonstrate that the placement of dredged materail at the site will not preclude present or future water-dependent use.

Site Number: Wa-S-10.9 (see Figure 4)

Previous Number or Name: 25(S) - CREST Plan and Warrenton Plan; SK-81 - Corps Maintenance Disposal Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Skipanon East Bank Mediated Development Zone (EB); Marine Commercial (C3); Tourist Commercial (C4)
Ownership: State; Port of Astoria; Private
Acreage and Capacity:

Disposal Site	Acreage	Total Capacity*	Spoils Between 1979 and 1986	Remaining Capacity	Site Priority
1	15.5	213,000	300,000+	0	
2	33.6	461,000	240,000	221,000	1
3	48.8	657,000	0	657,000	1
4	40.5	277,000	0	277,000	1
5	50.3	650,000	0	650,000	2
Totals	188.7	2,258,000	540,000	1,805,000	

*Total capacity assumes final site elevation of 16 feet above MLLW.

Related Projects:
Sites 2 and 4 - Flavel Shoal; Site 3 - Skipanon Channel, Warrenton Boat Basin, and E. & W. Bank Skipanon Development; Site 5 - Flavel Shoal, Skipanon Channel, and E. & W. Bank Skipanon Development.
Distance to Projects:
Flavel Shoal (Sites 2 and 4) 3,300 - 14,500 feet; Skipanon Channel (Site 3) 400-3,000 feet; Warrenton Boat Basin (Site 3) 500-1,200 feet; W. Bank Skipanon Development (Site 3) 2,000 - 5,000 feet; Flavel Shoal (Site 5) 8,300 - 14,500 feet; Skipanon Channel (Site 5) 1,700 - 3,500 feet; W. Bank Skipanon Development (Site 5) 2,000 to 6,000 feet; E. Bank Skipanon Development (Site 4) 50 - 1,000 feet.

Environmental, Engineering, and Land Use Issues

Wetlands: There is some concern about non-tidal wetlands on the peninsula. In 1984 the Corps of Engineers delineated and staked-out the wetland boundary along the eastern side of

site 4. disposal at site 4 will not be allowed on the east side of this boundary. Sites 2, 3, and 5 may contain some non-tidal wetlands. Prior to undertaking a disposal action, the Corps of Engineers and Division of State Lands will need to be consulted to determine if the site contains wetlands that are within their regulatory jurisdictions.

Mitigation Site: Site 5 is designated as a mitigation site in addition to a DMD site. Disposal may occur at Site 5 only if the mitigation site is not needed, as explained in Sections 3.130 through 3.135 of Warrenton's Zoning Ordinance.

Water-Dependent Industrial Zoning: Portions of the site are zoned for water-dependent industrial development. The project sponsor must demonstrate that the dredged material disposal will not preclude present or future water-dependnet use at the site.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal at sites 2, 3 or 5, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) Prior to undertaking disposal, the project sponsor shall demonstrate that the placement of dredged material at the site will not preclude present or future water-dependent use.

Site Number: Wa-S-11.7 (see Figure 4)

Previous Number or Name: 28(S) - CREST Plan; Warrenton Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Airport Development (I4)
Site Priority: 2
Ownership: Port of Astoria
Acreage: 32 Acres
Total Capacity: 260,000 cubic yards at an average of 5 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 260,000 cubic yards

Related Projects: 1) Youngs Bay and River; 2) Lewis and Clark River Entrance; 3) Port of Astoria Maintenance Dredging
Distance to Projects: 1) 8,300 feet; 2) 7,100 - 7,500 feet; 3) 15,000 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Airport Height Limitations: Because the site is adjacent to airport runways, the final elevation of the dredged materials will be restricted to provide for safe airport use. The dredge spoils will need to be graded and contoured to meet height restrictions set forth by the Federal Aviation Administration; Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and Section 4.020 of the Warrenton Zoning Ordinance.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Final Use: The site is designated for industrial use. The dredge material disposed of on the site should not preclude present or future industrial development.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon

Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The dredged materials shall not exceed the maximum height limitations set forth by Section 4.020 of the Warrenton Zoning Ordinance, Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and the Federal Aviation Administration.

Site Number: Wa-S-11.8 (see Figure 4)

Previous Number or Name: 29(S) - CREST Plan; Warrenton Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Airport Development (I4)
Site Priority: 2
Ownership: Port of Astoria
Acreage: 131 Acres
Total Capacity: 1,060,000 cubic yards at an average of 5 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 1,060,000 cubic yards
Related Projects: 1) Youngs Bay and River; 2) Lewis and Clark River Entrance; 3) Port of Astoria Maintenance Dredging
Distance to Projects: 1) 6,250 feet; 2) 6,250 - 7,100 feet; 3) 13,300 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling

ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Airport Height Limitations: Because the site is adjacent to airport runways, the final elevation of the dredged materials will be restricted to provide for safe airport use. The dredge spoils will need to be graded and contoured to meet height restrictions set forth by the Federal Aviation Administration; Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and Section 4.020 of the Warrenton Zoning Ordinance.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Final Use: The site is designated for industrial use. The dredge material disposed of on the site should not preclude present or future industrial development.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The dredged materials shall not exceed the maximum height limitations set forth by Section 4.020 of the Warrenton Zoning Ordinance, Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and the Federal Aviation Administration.

Site Number: Wa-S-11.9 (see Figure 4)

Previous Number or Name: none
Local Jurisdiction: Warrenton
Local Zoning Designation: Rural Development (RD)
Site Priority: 2
Ownership: Private
Acreage: 10.6 acres

Total Capacity: 170,000 cubic yards at an average of 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 170,000 cubic yards
Related Projects: 1) Youngs Bay and River; 2) Lewis and Clark River Entrance; 3) Port of Astoria Maintenance Dredging
Distance to Projects: 1) 5,700 feet + ; 2) 6,500 - 7,300 feet; 3) 11,250 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Airport Height Limitations: Because the site is adjacent to airport runways, the final elevation of the dredged materials will be restricted to provide for safe airport use. The dredge spoils will need to be graded and contoured to meet height restrictions set forth by the Federal Aviation Administration; Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and Section 4.020 of the Warrenton Zoning Ordinance.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Final Use: The site is designated for industrial use. The dredge material disposed of on the site should not preclude present or future industrial development.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The dredged materials shall not exceed the maximum height limitations set forth by Section 4.020 of the Warrenton Zoning Ordinance, Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and the Federal Aviation Administration.

Site Number: Wa-S-12.1 (see Figure 4)

Previous Number or Name: 30(S) - CREST Plan; Warrenton Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Airport Development (I4)
Site Priority: 2
Ownership: Port of Astoria
Acreage: 16.7 acres
Total Capacity: 135,000 cubic yards at an average of 5 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 135,000 cubic yards
Related Projects: 1) Youngs Bay and River; 2) Lewis and Clark River Entrance; 3) Port of Astoria Maintenance Dredging
Distance to Projects: 1) 4,200 feet + 2) 5,000 - 5,800 feet; 3) 10,400 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of

the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Airport Height Limitations: Because the site is adjacent to airport runways, the final elevation of the dredged materials will be restricted to provide for safe airport use. The dredge spoils will need to be graded and contoured to meet height restrictions set forth by the Federal Aviation Administration; Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and Section 4.020 of the Warrenton Zoning Ordinance.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Final Use: The site is designated for industrial use. The dredge material disposed of on the site should not preclude present or future industrial development.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The dredged materials shall not exceed the maximum height limitations set forth by Section 4.020 of the Warrenton Zoning Ordinance, Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and the Federal Aviation Administration.

Site Number: Wa-S-12.5 (see Figure 4)

Previous Number or Name: 31(S) - CREST Plan; Warrenton Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Airport Development (I4)
Site Priority: 2
Ownership: Port of Astoria
Acreage: 17.0 acres
Total Capacity: 137,000 cubic yards at an average of 5 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 137,000 cubic yards
Related Projects: 1) Youngs Bay and River; 2) Lewis and Clark River Entrance; 3) Port of Astoria Maintenance Dredging
Distance to Projects: 1) 4,200 feet +; 2) 3,300 - 3,750 feet; 3) 12,000 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Airport Height Limitations: Because the site is adjacent to airport runways, the final elevation of the dredged materials will be restricted to provide for safe airport use. The dredge spoils will need to be graded and contoured to meet height restrictions set forth by the Federal Aviation Administration; Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and Section 4.020 of the Warrenton Zoning Ordinance.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning

ordinance.

Final Use: The site is designated for industrial use. The dredge material disposed of on the site should not preclude present or future industrial development.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The dredged materials shall not exceed the maximum height limitations set forth by Section 4.020 of the Warrenton Zoning Ordinance, Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and the Federal Aviation Administration.

Site Number: Wa-S-12.6 (see Figure 4)

Previous Number or Name: 32(S) CREST Plan; Warrenton Plan
Local Jurisdiction: Warrenton
Local Zoning Designation: Airport Development (I4)
Site Priority: 2
Ownership: Port of Astoria
Acreage: 103 acres
Total Capacity: 831,000 cubic yards at an average of 5 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 831,000 cubic yards
Related Projects: 1) Youngs Bay and River; 2) Lewis and Clark River Entrance; 3) Port of Astoria Maintenance Dredging
Distance to Projects: 1) 5,400 feet; 2) 1,250 - 2,100 feet; 3) 13,800 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If

regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Airport Height Limitations: Because the site is adjacent to airport runways, the final elevation of the dredged materials will be restricted to provide for safe airport use. The dredge spoils will need to be graded and contoured to meet height restrictions set forth by the Federal Aviation Administration; Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and Section 4.020 of the Warrenton Zoning Ordinance.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Final Use: The site is designated for industrial use. The dredge material disposed of on the site should not preclude present of future industrial development.

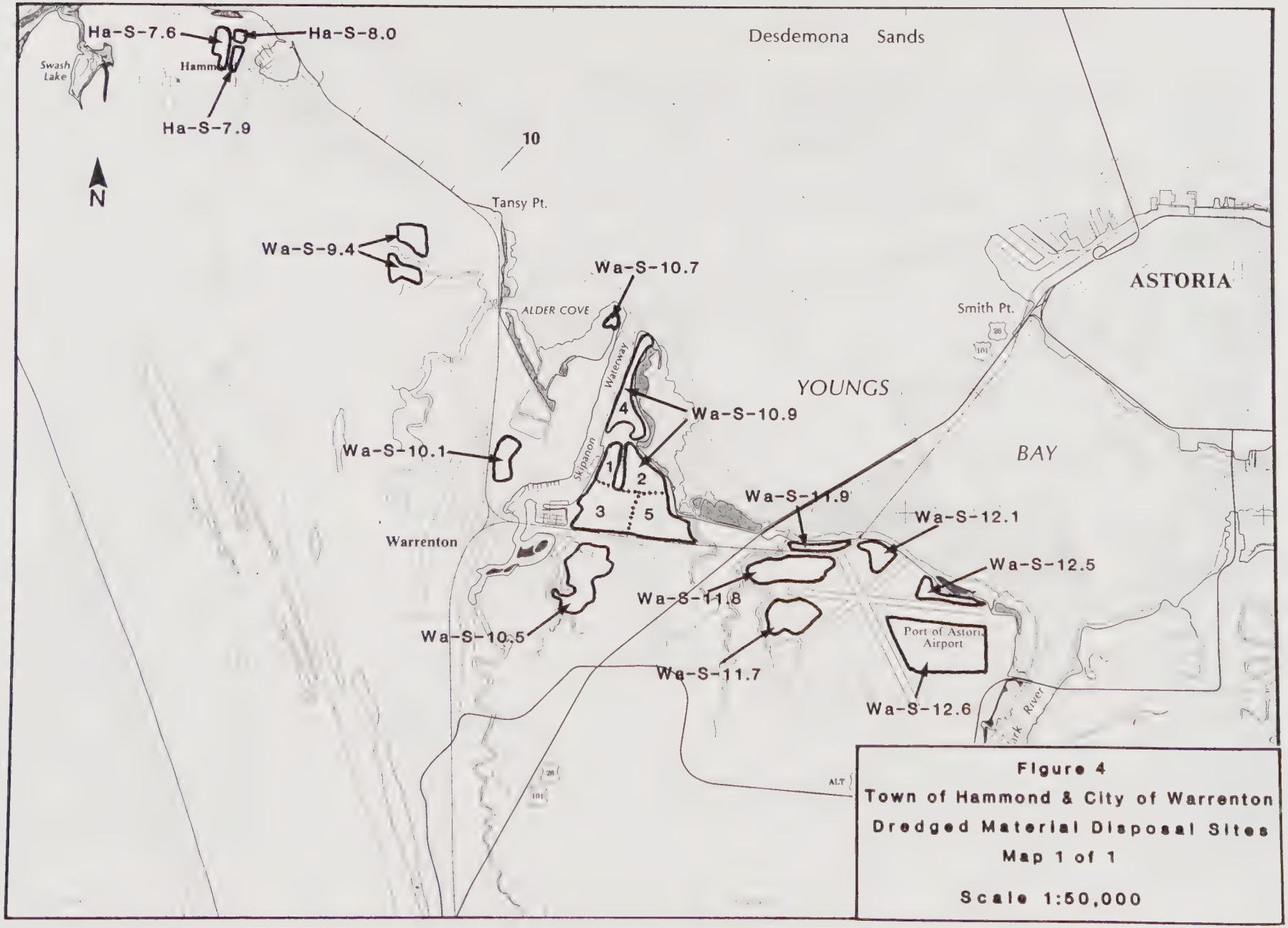
Site Boundary: The eastern boundary if the site corresponds with the dike on the western edge of the proposed Airport mitigation bank.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The dredged materials shall not exceed the maximum height limitations set forth by Section 4.020 of the Warrenton Zoning Ordinance, Section 4.320 of the Clatsop County Land and Water Development and Use Ordinance, and the Federal Aviation Administration.


Ha-S-7.6
Ha-S-8.0
Ha-S-7.9
Swash Lake
Hammond
Desdemona Sands
10
N
Tansy Pt.
Wa-S-9.4
Wa-S-10.7
ALDER COVE
Waterway
Skipanon
YOUNGS
BAY
Wa-S-10.9
Wa-S-10.1
1
2
3
4
5
Warrenton
Wa-S-11.9
Wa-S-12.1
Wa-S-12.5
Wa-S-11.8
Wa-S-10.5
Wa-S-11.7
Port of Astoria Airport
Wa-S-12.6
ASTORIA
Smith Pt.
ALT
Figure 4
Town of Hammond & City of Warrenton
Dredged Material Disposal Sites
Map 1 of 1
Scale 1:50,000

6.4 ASTORIA SITES

Site Number: As-S-16.3 (see Figure 5)

Previous Number or Name: 37(S) CREST Plan; Astoria Plan
Local Jurisdiction: Astoria
Local Zoning Designation: Marine Industrial Shorelands (S1)
Site Priority: 1
Ownership: Private
Acreage: 7 acres
Total Capacity: 112,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils from 1979 through June 1986: none
Remaining Capacity: 112,000 cubic yards
Related Projects: 1) East Mooring Basin; 2) West Mooring Basin; 3) Tongue Point Coast Guard Dock
Distance to Projects: 1) 400 - 2,100 feet; 2) 14,600 feet; 3) 8,300 feet

Environmental, Engineering, and Land Use Issues

Water-Dependent Industrial Zoning: Portions of the site are zoned for water-dependent industrial development. The project sponsor must demonstrate that the dredged material disposal will not preclude present of future water-dependent use at the site.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following;

1) Prior to undertaking disposal, the project sponsor shall demonstrate that the placement of dredged material at the site will not preclude present or future water-dependent use.

Site Number: As-S-18.2 (see Figure 5)

Previous Number or Name: 41(S) - CREST Plan; Astoria Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Tongue Point Mediated Development Zone (TPM)
Site Priority: 1
Ownership: State
Acreage: 8 acres
Total Capacity: 128,000 at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 128,000 cubic yards
Related Projects: Tongue Point Development
Distance to Projects: 200 - 9,200 feet

Environmental, Engineering, and Land Use Issues

Site Boundaries: The southeastern boundary of the site is defined by and existing cyclone fence.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Water-Dependent Industrial Zoning: The site is zoned for water-dependent industrial development. The project sponsor must demonstrate that the dredged material disposal will not preclude present or future water-dependent use at the site.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Dredged material shall not be placed waterward of the existing cyclone fence at the southeastern side of the site.

2) The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles.

3) Prior to undertaking disposal, the project sponsor shall demonstrate that the placement of dredged material at the site will not preclude present or future water-dependent use.

Site Number: As-S-18.7 (see Figure 5)

Previous Number or Name: 42(S) - CREST Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Tongue Point Mediated Development Zone (TMP)
Site Priority: 1
Ownership: Federal
Acreage: 59 acres
Total Capacity: 950,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 950,000 cubic yards

Related Projects: Tongue Point Development
Distance to Projects: 600 - 9,600 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Water-Dependent Industrial Zoning: The site is zoned for water-dependent industrial development. The project sponsor must demonstrate that the dredged material disposal will not preclude present or future water-dependent use at the site.

Significant Habitat: The U.S. Fish and Wildlife Service classifies all or parts of the shoreland habitat within the site as Resource Category 2. Mitigation may be required to offset the loss of this habitat.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit

programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles.

3) Prior to undertaking disposal, the project sponsor shall demonstrate that the placement of dredged material at the site will not preclude present or future water-dependent use.

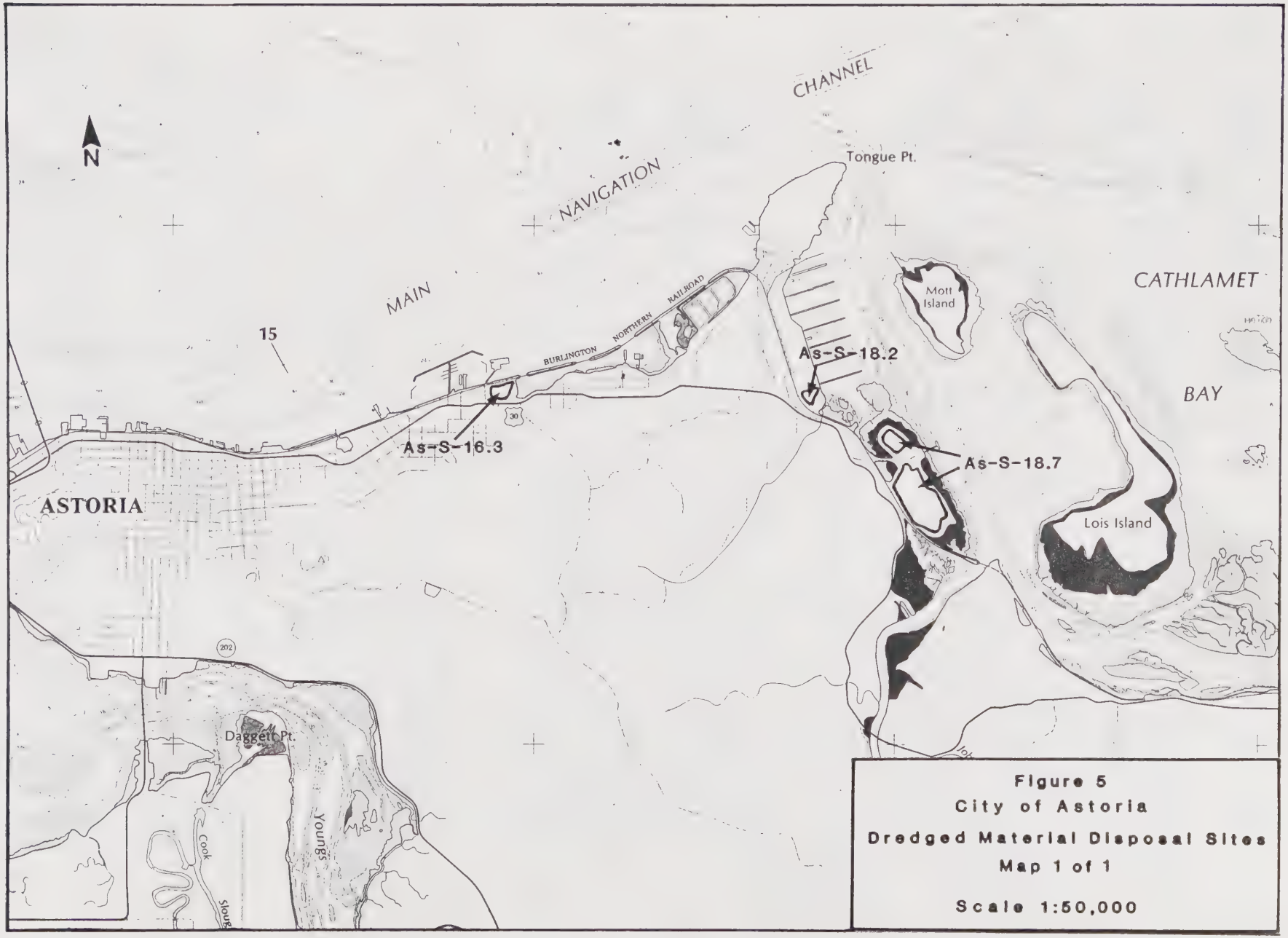


Figure 5
City of Astoria
Dredged Material Disposal Sites
Map 1 of 1

Scale 1:50,000

6.5 CLATSOP COUNTY SITES

Site Number: CC-S-3.1 (see Figure 6)

Previous Number or Name: 3(S); 46(S) - CREST Plan; Clatsop County Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Conservation Shoreland (CS)
Site Priority: 1
Ownership: Corps of Engineers
Acreage: 83.3 acres
Total Capacity: 2,500,000 cubic yards at 20 feet above surrounding land (assuming northern half of site had 5 feet of spoils as of 1979)
Amount of Spoils from 1979 to 1986: 420,000 cubic yards
Remaining Capacity: 2,080,000 cubic yards
Related Projects: Baker Bay West Channel
Distance to Projects: 800 - 7,500 feet

Environmental, Engineering, and Land Use Issues

Significant Habitat: The portion of Sand Island to the south of the site contains significant examples of native dunegrass communities and has been proposed for designation as a national natural landmark. Dredged material disposal should not occur south of the designated site. There is a concern about non-native plant species encroaching upon the native dunegrass communities. Revegetation of the site should be restricted to plant species and planting techniques that will not negatively impact the native dunegrass communities.

Sequence of Site Use: This is the first priority pipeline disposal site for Baker Bay West Channel. Pa-S-3.0 should be used after CC-S-3.1 is filled.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) No material shall be placed beyond the boundaries depicted on the map of CC-S-3.1. These boundaries are defined by aquatic areas to the north and west, the southern containment dike existing as of 1986 to the south (this outlines the northern limit of a proposed national natural landmark), and the containment dike existing as of 1986 to the east.

2) The site shall be revegetated as soon as practicable after disposal. The revegetation plan shall be coordinated with the agency responsible for overseeing the national natural landmark (or the Nature Conservancy if the landmark designation has not been made) to ensure that plant species and planting techniques do not adversely impact the native dune communities.

Site Number: CC-B-5.8 (see Figure 6)

Previous Number or Name: 100(B) - Clatsop County Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Aquatic Conservation - Two (AC-2); Conservation Shoreland (CS)
Site Priority: 1
Ownership: State; Corps of Engineers
Beach length: 4,100 feet
Total Capacity: 450,000 cubic yards assuming an average disposal depth of 10 feet and width of 300 feet
Amount of Spoils from 1979 through June 1986: none
Remaining Capacity: 450,000 cubic yards
Related Projects: Chinook Channel (southern portion of channel only)
Distance to Projects: 4,000 - 9,000 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within a gillnet fishing area. Prior to undertaking disposal, the project sponsor will be required to contact the local fishermens' associations and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Gull Nesting Colony: The area shoreward of the site is used by western and glaucous-winged gulls as a nesting colony.

Restrictions on Designated Project and Type of Material: This site is reserved for coarse-grained materials dredged from the southern portion of Chinook Channel only. Site CC-S-6.8 is reserved for fine grained material dredged from the northern portion of Chinook Channel.

Site Boundaries: The site consists of a sandy beach and intertidal area located waterward of a rip-rapped bank. The east and west ends of the site are bound by existing pile dikes extending from the shore.

Goal Exception: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Dredged materials shall not be placed beyond the site boundaries depicted on the map of CC-B-5.8.

2) The final elevation of the dredged materials shall not exceed the elevation at the top of the existing riprapped bankline at the site.

3) Prior to undertaking disposal, the project sponsor shall consult with the Columbia River Fishermans' Protective Union, N.W. Gillnetters Association, and the Oregon Department of Fish and Wildlife to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

4) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon, and nesting western/-glaucous winged gulls.

Site Number: CC-S-6.8 (see Figure 6)

Previous Number or Name: 9a(S) - Clatsop County Plan; S1-0.5 - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Conservation Shorelands (CS)
Site Priority: 1
Ownership: Corps of Engineers
Acreage: 18 acres
Total Capacity: 1,020,000 cubic yards at 35 feet above elevation of surrounding land
Amount of Spoils Prior to June 1986: approximately 440,000 cubic yards
Remaining Capacity: 580,000 cubic yards
Related Projects: Chinook Channel (northern portion of channel only)
Distance to Projects: 800 - 5,000 feet

Environmental, Engineering, and Land Use Issues

Caspian Tern Nesting Colony: A nesting colony of Caspian terns utilize the site from about mid May to the end of July. Because terns nest in open sand, it is preferable not to revegetate the site after disposal. Disposal should be timed to allow an adequate period for the site to dewater prior to the nesting season.

Gull Nesting Colony: The site is used by Western and - Glaucous-winged gulls as a nesting colony.

Restrictions on Designated Project and Type of Material: The site is reserved for fine-grained material dredged from the northern portion of Chinook Channel only. Site CC-B-5.8 is reserved for coarse-grained material removed by pipeline dredge from Chinook Channel.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The site shall not be expanded beyond its January 1986 boundaries as depicted on the map.

2) The containment dike shall be constructed from material obtained from within the existing disposal site. This material shall be placed on top and/or inside of the existing dike surrounding the site. No material shall be placed beyond the outside toe of the existing dike.

3) Care shall be taken not to disturb the vegetation on the outside face of the existing dike.

4) The timing of dredged material disposal shall be determined in coordination with state and federal fish and wildlife management agencies to minimize impacts to nesting Caspian Terns and Western Glaucous winged gulls and other resources affected by the dredging.

Site Number: CC-E-8.5 (see Figure 6)

Previous Number or Name: Area D
Local Jurisdiction: Clatsop County
Local Zoning Designation: Aquatic Development (AD)
Site Priority: 1
Ownership: State of Oregon
Total Capacity: Capacity set at 3,250,000 cubic yards per 5 year period for Corps projects and 100,000 cubic yards per year for non-federal projects
Related Projects: Area D provides for portions of Corps of Engineers disposal needs for maintenance for Desdemona Shoal, Flavel Shoal, Upper Sands Shoal, Tongue Point Crossing Shoal, Chinook Channel, Baker Bay West Channel, Skipanon Channel and the Columbia River Bar. Area D may also be used for non-federal dredging projects in the lower Columbia River provided the project complies with the policies and standards for in-water disposal.

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within a gillnet and crab fishing area. Prior to undertaking disposal, the project sponsor will be required to contact the local fishermens' associations and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fisheries.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Area D Use: The use of Area D shall be kept to an absolute minimum. In all cases, ocean disposal shall be substituted for the use of this site whenever feasible. The shoaling problems which result from dredged material disposal at Area D present an ongoing concern in the estuary. A large portion of the material deposited at the site moves upriver and is eventually redeposited in the navigation channel. A smaller portion of the Area D material moves into Baker Bay and is deposited. The Corps of Engineers should continue to examine alternative disposal sites and methods that would result in fewer adverse shoaling impacts. The use of Area D should be discontinued when feasible alternatives are found.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Dredged disposal at Area D shall be allowed for the following Corps dredging projects and sites: Flavel Shoal, Desdemona Shoal, Upper Sands Shoal, Tongue Point Crossing Shoal, Chinook Channel, Baker Bay West Channel, Skipanon Channel, and the Columbia River Bar. Non-federal projects proposed in estuarine locations between the mouth of the Columbia River and Tongue Point may also be eligible for disposal in Area D, provided they meet the policies and standards for estuarine in-water disposal.

2) Total disposal for Corps of Engineers projects at Area D shall not exceed 3,250,000 cubic yards over a 5 year period.

3) The Corps of Engineers has provided the following estimates of their Area D disposal needs for the projects and shoals listed in Condition #1.

Flavel Shoal	500,000 cubic yards per year
Desdemona, Upper Sands, and Tongue Point Crossing Shoals	30,000 cubic yards per year

Columbia River Bar	50,000 cubic yards per year
Skipanon, Chinook, and Baker Bay West Channels	65,000 cubic yards per year
Total Disposal	Approximately 650,000 cubic yards per year

All dredged material disposal at Area D shall be reported to the Clatsop County Department of Planning and Development. If annual disposal amounts significantly exceed those given above, the Corps of Engineers shall limit subsequent disposal operations at Area D to ensure that the 5-year disposal limit (3,250,000 cubic yards) is not exceeded.

4) Total annual disposal for non-federal projects shall not exceed 100,000 cubic yards.

5) Disposal shall be controlled so as to minimize impacts to commercial gillnet and crab fisherman.

Site Number: CC-S-12.7 (see Figure 6)

Previous Number or Name: 33(S) - CREST Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Exclusive Farm Use
Site Priority: 1
Ownership: Private
Acreage: 2.9 acres
Total Capacity: 69,000 cubic yards at 15' above existing elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 69,000 cubic yards
Related Projects: Lewis and Clark Log Sort Yard
Distance to Projects: 500 - 1,000 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Zoning: The site is zoned Exclusive Farm Use. The project sponsor must either demonstrate that the site will be suitable for agricultural use after disposal or obtain an exception to Statewide Planning Goal 3 for disposal on agricultural land.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

Site Number: CC-S-12.9 (see Figure 6)

Previous Number or Name: none
Local Jurisdiction: Clatsop County
Local Zoning Designation: Exclusive Farm Use (EFU)
Site Priority: 1
Ownership: Private
Acreage: 0.5 acres
Total Capacity: 7,400 cubic yards at 10 feet above surrounding ground elevation
Amount of Spoils Prior to June 1986: approximately 2,000 cubic yards
Remaining Capacity: 5,400 cubic yards
Related Projects: AMCCO Boat Basin Maintenance
Distance to Projects: 200 feet

Environmental, Engineering, and Land Use Issues

Dike Stockpile: The site is intended to act as a stockpile for eventual removal of the dredged material for dike maintenance. Fine sediments such as silts and clays are the preferred type of material to place at the site.

Zoning: The site is zoned Exclusive Farm Use. The project sponsor must either demonstrate that the site will be suitable for agricultural use after disposal or obtain an exception to Statewide Planning Goal 3 for disposal on agricultural land.

Site Number: CC-S-18.6 (see Figure 6)

Previous Number or Name: 44(S) - CREST Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Residential Agriculture-One (RA-1)
Site Priority: 1
Ownership: Private
Acreage: 59 acres
Total Capacity: 845,000 cubic yards at 3 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 845,000 cubic yards
Related Projects: Tongue Point Development
Distance to Projects: 8,300 - 14,600 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Potential Flood Hazard: Raising the ground elevation at the site may increase the flood hazard on the surrounding land by either reducing the flood storage capacity of the area or impeding a floodway. The project sponsor must comply with all flood hazard requirements of the local plan and zoning ordinance.

Drainage from the Disposal Site: Because the site is located shoreward of a road, runoff from the disposal will need to flow to and under the road through drainageways and culverts prior to entering the main waterway. Existing culverts and drainageways may not be adequate to handle the runoff from a hydraulic dredging operation. The project sponsor must either demonstrate that the existing drainage system is adequate or install an adequate drainage system prior to undertaking disposal.

Ownership: As of the writing of this plan, the site owner has not expressed interest in receiving dredged materials on the property.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

2) The project sponsor shall demonstrate that the existing drainageways and culverts are adequate to carry the runoff associated with the dredging operation from the disposal site to the main waterway. If the existing drainage system is not adequate, the project sponsor shall submit a proposal for increasing its capacity. All necessary approvals from property owners, road departments, and other agencies must be obtained prior to altering or installing drainageways and culverts.

Site Number: CC-S-18.8 (see Figure 6)

Previous Number or Name: none
Local Jurisdiction: Clatsop County
Local Zoning Designation: Residential - Agriculture One (RA-1)
Site Priority: 1
Ownership: Clatsop County
Acreage: 1.6 acres
Total Capacity: 27,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 27,000 cubic yards
Related Projects: John Day Boat Ramp Maintenance
Distance to Projects: 50 feet

Site Number: CC-E-21.0 (see Figure 6)

Previous Number or Name: 54(E) - CREST Plan; Harrington Sump - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Aquatic Development (AD)
Site Priority: 1
Ownership: State
Acreage: n/a
Total Capacity: n/a

Amount of Spoils Prior to June 1986: n/a
Remaining Capacity: n/a
Related Projects: 1) Flavel Shoal; 2) Upper Sands Shoal; 3) Tongue Point Crossing Shoal; 4) Miller Sands Bar; 5) Pillar Rock Bar
Distance to Projects: 1) 39,200 - 49,200 feet; 2) 15,400 - 20,400 feet; 3) 800 - 9,600 feet; 4) 800 - 13,700 feet; 5) 17,500 - 31,700 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Rehandling: Material placed in this site should be pumped to Rice Island as soon as possible after disposal.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

2) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

Site Number: Wk-S21.2/CC-S-21.2 (see Figure 6)

Previous Number or Name: 55(S) - CREST Plan; W21.0 - Corps Maintenance Disposal Plan
Local Jurisdiction: Wahkiakum County/Clatsop County
Local Zoning Designation: Conservation Shorelands (CS)
Site Priority: 1

Ownership: State
Acreage: 215 acres
Total Capacity: 6,900,000 at 20 feet above existing ground elevation
Related Projects: 1) Receives material from Harrington Sump (CC-E-21.0); 2) Miller Sands Bar
Distance to Projects: 1) 800 - 8,300 feet; 2) 1,400 - 11,000 feet

Environmental, Engineering, and Land Use Issues

Disposal Site Runoff: Runoff from the disposal site shall not be allowed to enter the sensitive tidal flats north of Rice Island.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service, the Washington Department of Game, and Oregon Department of Fish and Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Nesting Geese, Gulls, and Terns: Geese, gulls, and Caspian terns nest on Rice Island. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts to the nesting birds.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The northern boundary of the site shall be diked to prevent dredged materials from entering the intertidal area north of the island.

2) The site is within the known home range of a nesting pair of bald eagles and is used by nesting geese, gulls, ant terns. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service, the Washington Department of Game, and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls, and terns.

Site Number: CC-B-23.1 (see Figure 6)

Previous Number or Name: 56(B) - CREST Plan
Local Jurisdiction: Clatsop County

Local Zoning Designation: Aquatic Conservation - Two (AC-2); Conservation Shoreland (CS)
Site Priority: 1
Ownership: State/Federal
Beach Length: 11,250 feet
Total Capacity: 415,000 cubic yards assuming an average disposal width of 100 feet and height of 10 feet
Related Projects: Miller Sands Bars
Distance to Projects: 1,250 - 3,300 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Nesting Geese, Gulls and Terns: Geese, gulls and Caspian terns nest on Rice Island. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts to the nesting birds.

Goal Exception: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association,

and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

3) The site is within the known home range of a nesting pair of bald eagles and is used by nesting geese, gulls, and terns. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls, and terns.

Site Number: CC-S-23.5 (see Figure 6)

Previous Number or Name: 0-23.5 - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Conservation Shoreland (CS)
Site Priority: 1
Ownership: Federal
Acreage: 98 acres
Total Capacity: 1,580,000 cubic yards at 10 feet above existing elevation
Related Projects: Miller Sands Bar
Distance to Projects: 1,250 - 3,000 feet

Environmental, Engineering, and Land Use Issues

Disposal Site Runoff: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands south of the site.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Nesting Geese, Gulls and Terns: Geese, gulls and Caspian terns nest on Rice Island. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts

to the nesting birds.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The southern boundary of the site shall be diked to prevent dredged material or associated runoff from entering the tidal wetlands south of the site.

2) The site is within the known home range of a nesting pair of bald eagles and is used by nesting geese, gulls and terns. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls and terns.

Site Number: CC-S-24.0 (see Figure 6)

Previous Number or Name: 46(S) CREST Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Exclusive Farm Use (EFU)
Site Priority: 1
Ownership: Private
Acreage: 282 acres
Total Capacity: 4,500,000 cubic yards at 10 feet above existing elevation
Amount of Spoils Prior to June 1986: approximately 100,000 cubic yards
Remaining Capacities: 4,400,000 cubic yards
Related Projects: 1) Port of Astoria Slips; 2) West Mooring Basin; 3) Tongue Point Coast Guard Docks; 4) Tongue Point Development
Distance to Projects: 1) 57,100 - 58,700 feet; 2) 56,700 feet; 3) 36,200 feet; 4) 20,500 - 23,500 feet

Environmental, Engineering, and Land Use Issues

Mitigation Site: The western portion of the island is designated as a mitigation site in Clatsop County's Plan. With the exception of dredged material disposal for dike maintenance, this area cannot be used as a disposal site unless it is clearly demonstrated that the mitigation site is either not needed or has been replaced by a site of equal restoration value in the same region of the estuary.

Significant Nontidal Wetland: The western portion of the island contains a large wetland designated as significant in the Goal 17 element of Clatsop County's Plan (see map). With the exception of dredged material disposal for dike maintenance this area cannot be used as a disposal site

unless the project sponsor obtains an exception to Goal 17 to allow for disposal in the wetland.

Other Wetlands: The site may contain non-tidal wetlands that, in addition to the Goal 17 wetland, fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Zoning: The site is zoned Exclusive Farm Use. The project sponsor must either demonstrate that the site will be suitable for agricultural use after disposal or obtain an exception to Statewide Planning Goal 3 for disposal on agricultural land.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers and the Oregon Division of State Lands (DSL) to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DSL permits to fill the wetlands.

Site Number: CC-S-27.2 (see Figure 6)

Previous Number or Name: 0-27.2 - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Conservation Shoreland (CS)
Site Priority: 1
Ownership: Federal
Acreage: 139 acres
Total Capacity: 2,240,000 cubic yards at 10 feet above existing elevation
Related Projects: Pillar Rock Bar
Distance to Projects: 400 - 9,000 feet

Environmental, Engineering, and Land Use Issues

Disposal Site Runoff: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands to the south of the island.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Nesting Geese, Gulls and Terns: Geese, gulls and Caspian terns nest on Rice Island. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts to the nesting birds.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The southern boundary of the site shall be diked to prevent dredged material or associated runoff from entering the tidal wetlands south of the site.

2) The site is within the known home range of a nesting pair of bald eagles and is used by nesting geese, gulls and terns. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls and terns.

Site Number: CC-B-27.2 (see Figure 6)

Previous Number or Name: 60(B) CREST Plan; 0-27.2 - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Aquatic Conservation - Two (AC-2); Conservation Shorelands (CS)
Site Priority: 1
Ownership: State; Federal
Beach Length: 5,400 feet
Total Capacity: 300,000 cubic yards assuming an average disposal width of 150 feet and height of 10 feet
Related Projects: Pillar Rock Bar
Distance to Projects: 400 - 9,600 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Nesting Geese, Gulls and Terns: Geese, gulls and Caspian terns nest on Rice Island. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts to the nesting birds.

Goal Exception: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

3) The site is within the known home range of a nesting pair of

bald eagles and is used by nesting geese, gulls and terns. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls and terns.

Site Number: CC-S-31.2 (see Figure 6)

Previous Number or Name: 0-31.2 - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Conservation Shoreland (CS)
Site Priority: 1
Ownership: Clatsop County
Acreage: 26 acres
Total Capacity: 425,000 cubic yards at 10 feet above existing elevation
Related Projects: Brookfield - Welch Island Bars
Distance to Projects: 2,900 - 14,600 feet

Site Number: CC-B-36.8 (see Figure 6)

Previous Number or Name: 72(B) CREST Plan; 0-36.8 - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Aquatic Conservation Two (AC-2); Conservation Shorelands (CS)
Site Priority: 2
Ownership: Federal; State
Beach length: 2,500 feet
Total Capacity: 90,000 cubic yards assuming an average disposal width of 100 feet and height of 10 feet
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 90,000 cubic yards
Related Projects: 1) Puget Island Bar; 2) Skamokawa Bars
Distance to Projects: 1) 4,200 to 10,800 feet; 2) 4,500 - 18,000 feet

Environmental, Engineering, and Land Use Issues

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Goal Exception: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles.

2) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

3) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: CC-S-38.3 (see Figure 6)

Previous Number or Name: 0-38.3 - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Conservation Shoreland (CS)
Site Priority: 1
Ownership: State
Acreage: 37 acres

Total Capacity: 595,000 cubic yards at 10 feet above existing elevation
Related Projects: Puget Island Bar
Distance to Projects: 1,200 - 3,700 feet

Environmental, Engineering, and Land Use Issues

Disposal Site Runoff: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands west of the site.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The western boundary of the site shall be diked to prevent dredged materials from entering the intertidal area west of the site.

Site Number: CC-B-38.3 (see Figure 6)

Previous Number or Name: 77(B) CREST Plan; 0-38.3 - Corps Maintenance Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Aquatic Conservation Two (AC-2); Conservation Shorelands (CS)
Site Priority: 1
Ownership: State
Beach Length: 2,400 feet
Total Capacity: 175,000 cubic yards assuming an average disposal width of 200 feet and height of 10 feet
Related Projects: Puget Island Bar
Distance to Projects: 1,200 - 3,700 feet

Environmental, Engineering, and Land Use Issues

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Goal Exception: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall

consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: CC-S-38.9 (see Figure 6)

Previous Number or Name: 78(S) - CREST Plan; Clatsop County Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Marine Industrial Shorelands (MI)
Site Priority: 1
Ownership: Private
Acreage: 26 acres
Total Capacity: 420,000 cubic yards at 10 feet above existing elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 420,000 cubic yards
Related Projects: 1) Water Dependent Development at site; 2) Puget Island Bar
Distance to Projects: 1) 400 - 1,700 feet; 2) 1,000 - 7,900 feet

Environmental, Engineering, and Land Use Issues

Disposal Site Runoff: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands to the south and west of the site.

Water-Dependent Industrial Zoning: The site is zoned for water-dependent industrial development. The project sponsor must demonstrate that the dredged material disposal will not preclude present of future water-dependent use at the site.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The western boundary of the site shall be diked to prevent dredged material from entering the intertidal area west of the site.

2) Prior to undertaking disposal, the project sponsor shall demonstrate that the placement of dredged material at the site will not preclude present or future water-dependent use.

Site Number: CC-S-42.9 (see Figure 6)

Previous Number or Name: 90(S) - CREST Plan; 0-42.9 - Corps Maintenance Disposal Plan

Local Jurisdiction: Clatsop County
Local Zoning Designation: Heavy Industrial (HI)
Site Priority: 1
Ownership: Private
Acreage: 95 acres
Total Capacity: 1,500,000 cubic yards at 10 feet above existing elevation
Related Projects: 1) Wauna/Lower Westport Bars; 2) Westport Slough
Distance to Projects: 1) 800 to 13,300 feet; 2) 50 to 4,000 feet

Environmental, Engineering, and Land Use Issues

Disposal Site Runoff: Runoff from a disposal operation will have to be directed into the main river channel so that it does not flow into and adversely impact the swamps south and west of the disposal site.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Runoff from the dredged material disposal operation shall be directed so as not to flow into the swamps south and west of the disposal site.

Site Number: CC-B-44.0 (see Figure 6)

Previous Number or Name: 92(B) - CREST Plan; W-44.0 - Corps Maintenance Disposal Plan
Local Jurisdiction: Clatsop County
Local Zoning Designation: Residential-Agriculture-One (RA-1); Open Space, Parks and Recreation (OPR)
Site Priority: 1
Ownership: Private; State
Beach Length: 4,600 feet
Total Capacity: 340,000 cubic yards assuming an average disposal width of 200 feet and height of 10 feet
Related Projects: Wauna/Lower Westport Bars
Distance to Projects: 800 to 18,300 feet

Environmental, Engineering, and Land Use Issues

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Goal Exception: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to

designating the site in the Comprehensive Plan.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

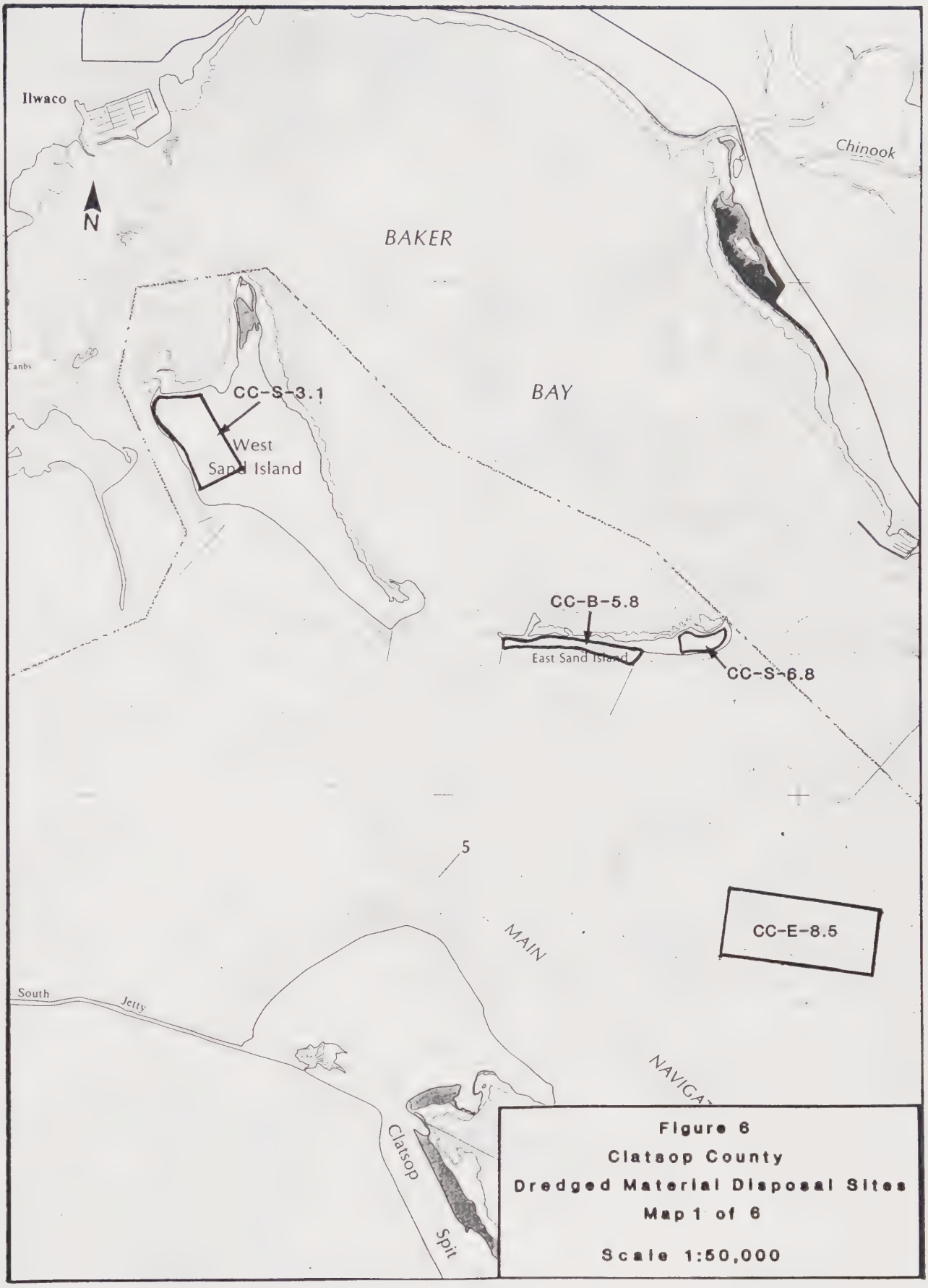


Figure 6
Clatsop County
Dredged Material Disposal Sites
Map 1 of 6

Scale 1:50,000

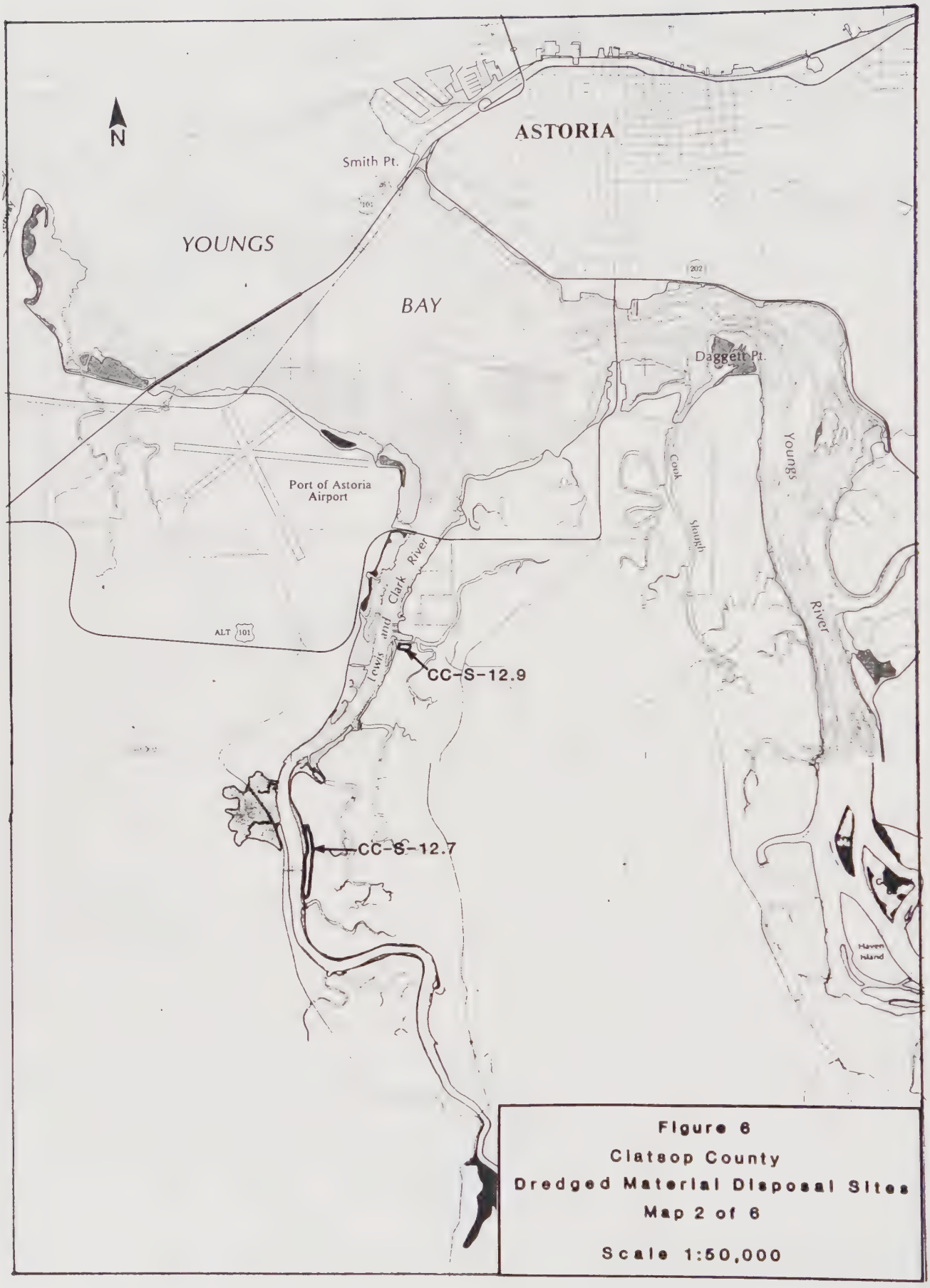
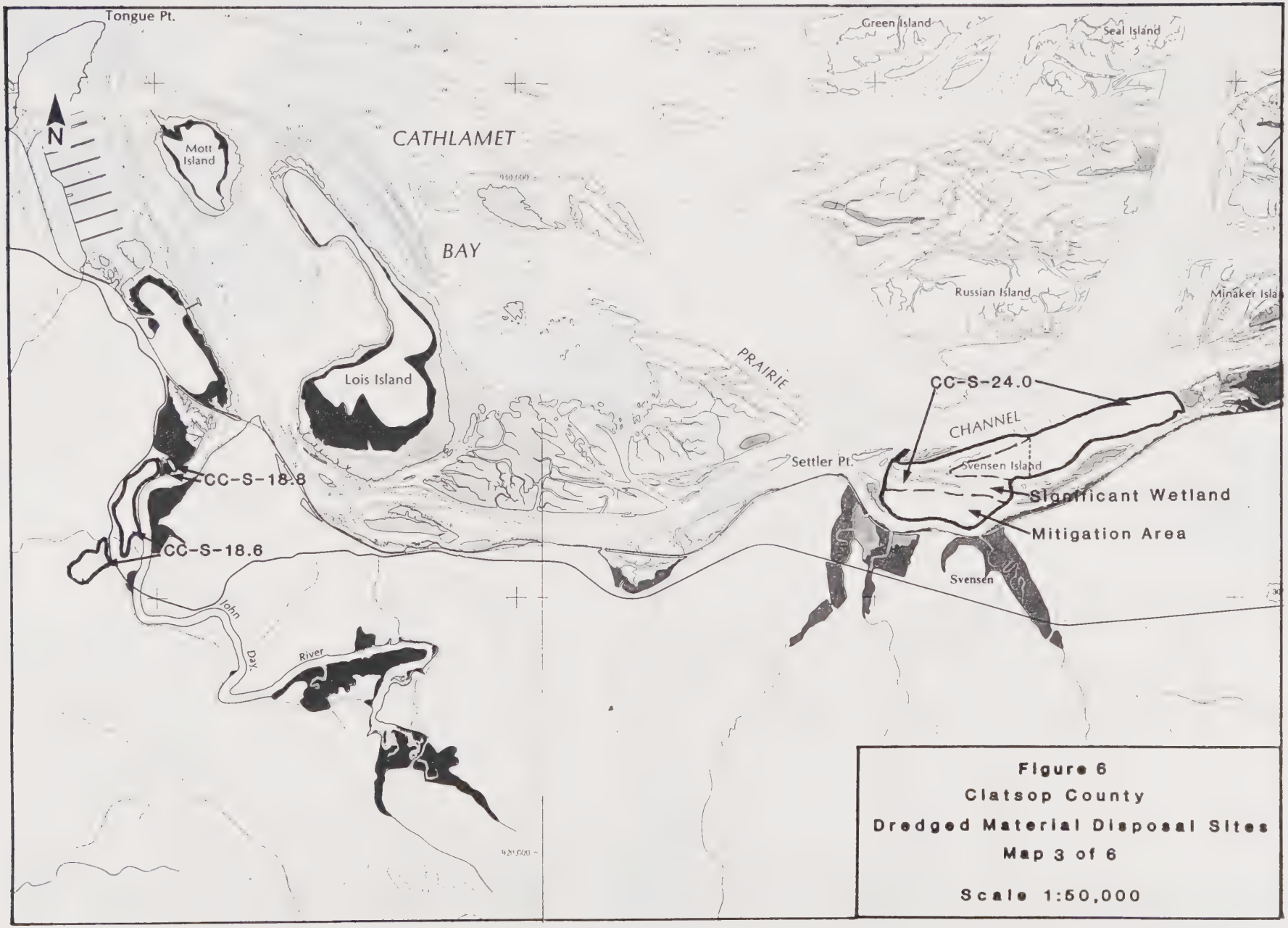


Figure 6
Clatsop County
Dredged Material Disposal Sites
Map 2 of 6

Scale 1:50,000


Tongue Pt.
Green Island
Seal Island
N
Mott Island
CATHLAMET
BAY
Russian Island
Minaker Isla
Lois Island
PRAIRIE
CC-S-24.0
CHANNEL
Settler Pt.
Svensen Island
Significant Wetland
Mitigation Area
CC-S-18.6
CC-S-18.6
Svensen
John Day River
Figure 6
Clatsop County
Dredged Material Disposal Sites
Map 3 of 6
Scale 1:50,000

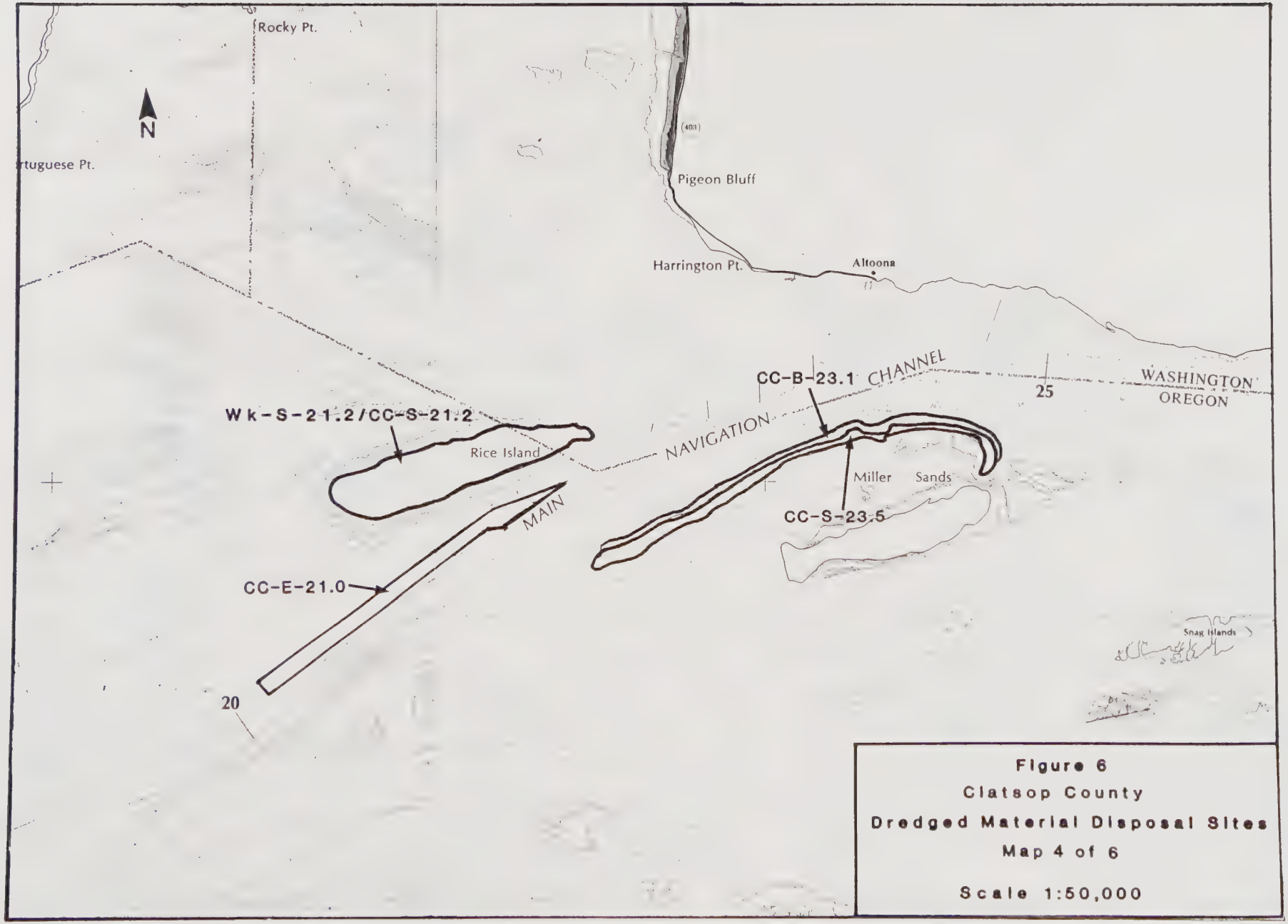


Figure 6
Clatsop County
Dredged Material Disposal Sites
Map 4 of 6

Scale 1:50,000

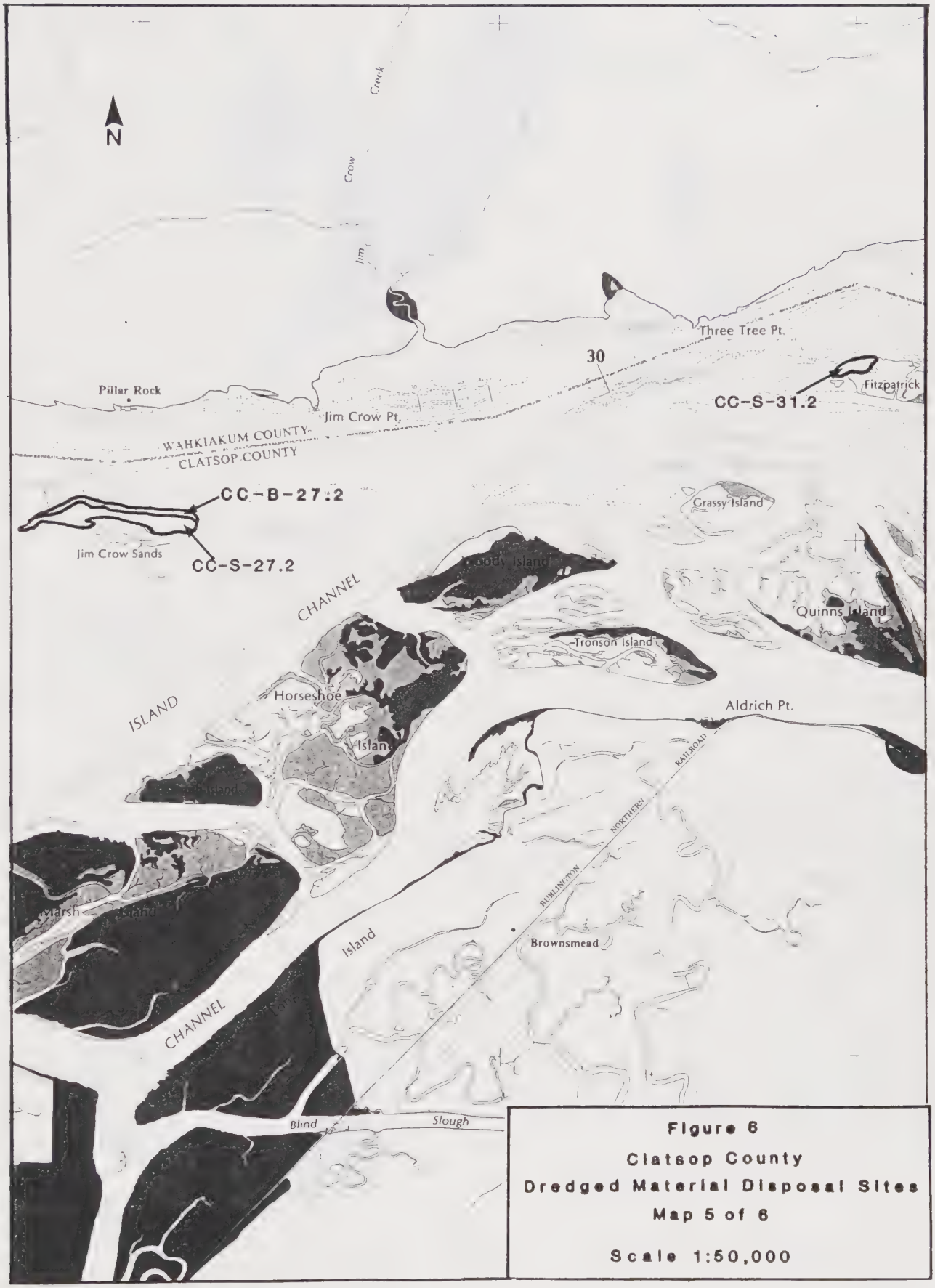


Figure 6

Clatsop County

Dredged Material Disposal Sites

Map 5 of 6

Scale 1:50,000

Figure 6

Clatsop County
Dredged Material Disposal Sites
Map 6 of 6

Scale 1:50,000

6.6 WAHKIAKUM COUNTY SITES

Site Number: Wk-S-20.7 (see Figure 7)

Previous Number or Name: 48(S) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Rural Shoreland (R-s)
Site Priority: 1
Ownership: Private
Acreage: 15 acres
Total Capacity: 240,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 240,000 cubic yards
Related Projects: 1) Grays Bay Channel; 2) Deep River Channel
Distance to Projects: 1) 2,100 - 5,632 feet; 2) 800 - 8,300 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 permit jurisdiction. Prior to undertaking disposal, the Corps of Engineers must be consulted to determine if the site contains wetlands within their regulatory jurisdiction. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal approval to fill the wetlands. The Federal agency may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service and Washington Department of Game prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

2) The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and the Washington Department of Game to determine methods of reducing potential impacts to bald eagles.

Site Number: Wk-S-21.1 (see Figure 7)

Previous Number or Name: 49(S) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Rural Shorelands (R-s)
Site Priority: 1
Ownership: Private
Acreage: 22 acres
Total Capacity: 350,000 cubic yards at 10 feet above existing elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 350,000 cubic yards
Related Projects: Deep River Channel
Distance to Projects: 200 - 7,100 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 permit jurisdiction. Prior to undertaking disposal, the Corps of Engineers and must be consulted to determine if the site contains wetlands within their regulatory jurisdiction. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal approval to fill the wetlands. The Federal agency may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

Site Number: Wk-S-22.4 (see Figure 7)

Previous Number or Name: 52(S) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Rural Shorelands (R-s)
Site Priority: 2
Ownership: Private
Acreage: 19 acres
Total Capacity: 307,000 cubic yards at 10 feet above existing ground elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 307,000 cubic yards
Related Projects: 1) Grays Bay Channel; 2) Grays River Channel
Distance to Projects: 1) 6,200 - 8,300 feet; 2) 400 - 6,250 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 or permit jurisdiction. Prior to undertaking disposal, the Corps of Engineers must be consulted to determine if the site contains wetlands within their regulatory jurisdiction. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal approval to fill the wetlands. The Federal agency may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Disposal Site Runoff: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

Bald Eagles: The site is within the home range of a nesting pair of bald eagles. The project sponsor will be required

to consult with the U.S. Fish and Wildlife Service and Washington Department of Game prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

2) The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Department of Game to determine methods of reducing potential impacts to bald eagles.

Site Number: Wk-S-22.9 (see Figure 7)

Previous Number or Name: 51(S) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Rural Shorelands (R-s)
Site Priority: 2
Ownership: Private
Acreage: 25 acres
Total Capacity: 400,000 cubic yards at 10 feet above existing elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 400,000 cubic yards
Related Projects: Grays River Channel
Distance to Projects: 200 - 7,100 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 permit jurisdiction. Prior to undertaking disposal, the Corps of Engineers must be consulted to determine if the site contains wetlands within their regulatory jurisdiction. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal approval to

fill the wetlands. The Federal agency may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

Site Number: Wk-B-33.4 (see Figure 7)

Previous Number of Name: 66(B) - CREST Plan; W-33.4 - Corps Maintenance Disposal Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a); Urban Shoreland (U-s)
Site Priority: 1
Ownership: Wahkiakum Port District #2
Beach Length: 3,300 feet
Total Capacity: 250,000 cubic yards assuming an average disposal width of 200 feet and height of 10 feet
Related Projects: 1) Skamokawa Creek Improvement; 2) Skamokawa Bar
Distance to Projects: 1) 400 - 1,700 feet; 2) 1,200 - 10,400 feet

Environmental, Engineering, and Land Use Issues

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-S-36.9 (see Figure 7)

Previous Number or Name: 74(S) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Urban Shorelands (U-s)
Site Priority: 1
Ownership: Private
Acreage: 7.5 acres
Total Capacity: 120,000 cubic yards at 10 feet above existing elevation
Related Projects: Elochoman Slough
Distance to Projects: 400 - 8,300 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 permit jurisdiction. Prior to undertaking disposal, the Corps of Engineers must be consulted to determine if the site contains wetlands within their regulatory jurisdiction. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal approval to fill the wetlands. The Federal agency may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Columbian White-Tailed Deer: The site provides habitat for the endangered Columbian white-tailed deer.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

2) Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Department of Game to minimize potential impacts to Columbian white-tailed deer.

Site Number: Wk-S-38.1 (see Figure 7)

Previous Number or Name: 74(S) - CREST Plan
Local Jurisdiction: Wahkiakum County

Local Zoning Designation: Natural Shorelands (N-s)
Site Priority: 1
Ownership: unknown
Acreage: 3.6 acres
Total Capacity: 58,000 cubic yards at 10 feet above existing elevation
Related Projects: Cathlamet Boat Basin
Distance to Projects: 2) 400 - 1,200 feet

Environmental, Engineering, and Land Use Issues

Wetlands: The site may contain non-tidal wetlands that fall within Federal Section 404 permit jurisdiction. Prior to undertaking disposal, the Corps of Engineers must be consulted to determine if the site contains wetlands within their regulatory jurisdiction. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal approval to fill the wetlands. The Federal agency may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Columbian White-Tailed Deer: The site provides habitat for the endangered Columbian white-tailed deer.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs administered by those agencies. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

2) Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Department of Game to minimize potential impacts to Columbian white-tailed deer.

Site Number: Wk-S-38.4 (see Figure 7)

Previous Number or Name: 79(S) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Rural Shorelands (R-s)
Site Priority: 1
Ownership: Wahkiakum County
Acreage: 8 acres

Total Capacity: 128,000 cubic yards at 10 feet above existing elevation
Amount of Spoils from 1979 through June 1986: unknown
Remaining Capacity: depends on amount removed for reuse
Related Projects: Puget Island Bar
Distance to Projects: 1,200 to 4,200 feet

Environmental, Engineering, and Land Use Issues

Stockpiling: The site is intended to act as a stockpile for eventual removal of the dredged material for construction fills or other uses.

Site Number: Wk-B-38.7 (see Figure 7)

Previous Number or Name: W-38.7 Corps Maintenance Disposal Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a)
Site Priority: 1
Ownership: unknown
Beach Length: 2,900 feet
Total Capacity: 216,000 cubic yards assuming an average disposal width of 200 feet and height of 10 feet
Related Projects: Puget Island Bar
Distance to Projects: 400 - 4,200 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet

fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-B-38.8 (see Figure 7)

Previous Number or Name: 80(B) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a)
Site Priority: 1
Ownership: Private
Beach Length: 800 feet
Total Capacity: 62,000 cubic yards assuming an average disposal width of 200 feet and height of 10 feet
Related Projects: Puget Island Bar
Distance to Projects: 800 - 7,500 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will

minimize impacts to juvenile salmon.

Site Number: Wk-B-40.8 (see Figure 7)

Previous Number or Name: 82(B) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a)
Site Priority: 1
Ownership: Private
Beach Length: 900 feet
Total Capacity: 33,000 cubic yards assuming an average disposal width of 100 feet and height of 10 feet
Related Projects: Wauna/Lower Westport Bars
Distance to Projects: 400 - 19,200 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-B-40.9 (see Figure 7)

Previous Number or Name: W-40.9 - Corps Maintenance Disposal Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a)
Site Priority: 1
Ownership: unknown
Beach Length: 2,500 feet
Total Capacity: 92,500 cubic yards assuming an average disposal width of 100 feet and height of 10 feet
Related Projects: Wauna/Lower Westport Bars
Distance to Projects: 800 - 16,700 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-S-41.2 (see Figure 7)

Previous Number or Name: 85(S) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Rural Shorelands (R-s)
Site Priority: 1

Ownership: Private
Acreage: 5.3 acres
Total Capacity: 85,000 cubic yards at 10 feet above existing elevation
Related Projects: Welcome Slough
Distance to Projects: 200 - 6,200 feet

Environmental, Engineering, and Land Use Issues

Drainage from the Disposal Site: Because the site is located shoreward of a road, runoff from the disposal will need to flow to and under the road through drainageways and culverts prior to entering the main waterway. Existing culverts and drainageways may not be adequate to handle the runoff from a hydraulic dredging operation. The project sponsor must either demonstrate that the existing drainage system is adequate or install an adequate drainage system prior to undertaking disposal.

Stockpiling: The site is intended to act as a stockpile for eventual removal of the dredged material for construction fills or other uses.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The project sponsor shall demonstrate that the existing drainageways and culverts are adequate to carry the runoff associated with the dredging operation from the disposal site to the main waterway. If the existing drainage system is not adequate, the project sponsor shall submit a proposal for increasing its capacity. All necessary approvals from property owners, road departments, and other agencies must be obtained prior to altering or installing drainageways and culverts.

Site Number: Wk-B-41.3 (see Figure 7)

Previous Number or Name: 88(B) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a)
Site Priority: 1
Ownership: Private
Beach Length: 4,000 feet
Total Capacity: 148,000 cubic yards assuming an average disposal width of 100 feet and height of 10 feet
Related Projects: Wauna/Lower Westport Bars
Distance to Projects: 2,500 - 12,500 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captains, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-S-41.8 (see Figure 7)

Previous Number or Name: 86(S) - CREST Plan; W-41.8 - Corps Maintenance Disposal Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Rural Shorelands (R-s)
Site Priority: 1
Ownership: Wahkiakum County
Acreage: 6.2 acres
Total Capacity: 100,000 cubic yards at 10 feet above existing elevation
Amount of Spoils Prior to June 1986: none
Remaining Capacity: 100,000 cubic yards
Related Projects: Wauna/Lower Westport Bars
Distance to Projects: 2,500 - 12,500 feet

Site Number: Wk-B-42.4 (see Figure 7)

Previous Number or Name: 87(B) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a)
Site Priority: 1
Ownership: Private
Beach Length: 4,200 feet
Total Capacity: 310,000 cubic yards assuming an average disposal width of 200 feet and height of 10 feet
Related Projects: Wauna/Lower Westport Bars
Distance to Projects: 2,500 - 10,400 feet

Environmental, Engineering, and Land Use Issues

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-S-42.5 (see Figure 7)

Previous Number or Name: 89(S) - CREST Plan; W-42.5 - Corps Maintenance Disposal Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Shoreland (C-s)
Site Priority: 1
Ownership: Federal
Acreage: 35 acres
Total Capacity: 560,000 cubic yards at 10 feet above existing elevation
Related Projects: Wauna/Lower Westport Bars
Distance to Projects: 800 - 10,400 feet

Site Number: Wk-B-43.8 (see Figure 7)

Previous Number or Name: 91(B) - CREST Plan; W-43.0 - Corps Maintenance Disposal Plan

Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a)
Site Priority: 1
Ownership: Private
Beach Length: 3,250 feet
Total Capacity: 120,000 cubic yards assuming an average disposal width of 100 feet and height of 10 feet
Related Projects: Wauna/Lower Westport Bars
Distance to Projects: 1,000 to 16,700 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-B-45.0 (see Figure 7)

Previous Number or Name: 94(B) - CREST Plan; W-45.0 - Corps Maintenance Disposal Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a)
Site Priority: 1
Ownership: State
Beach Length: 5,400 feet

Total Capacity: 300,000 cubic yards assuming an average disposal width of 150 feet and height of 10 feet
Related Projects: Westport Bars
Distance to Projects: 1,400 - 14,600 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-S-45.0 (see Figure 7)

Previous Number or Name: none
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Shoreland (C-s)
Site Priority: 1
Ownership: State
Acreage: 28 acres
Total Capacity: 450,000 cubic yards at 10 feet above existing elevation
Related Projects: Westport Bars
Distance to Projects: 1,400 - 14,600 feet

Environmental, Engineering, and Land Use Issues

Disposal Site Runoff: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands to the north of the site.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The northern boundary of the site shall be diked to prevent material from entering the swamp north of the disposal area.

Site Number: Wk-B-46.3 (see Figure 7)

Previous Number or Name: 96(B) - CREST Plan; W-46.3 - Corps Maintenance Disposal Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Aquatic (C-a); Conservation Shoreland (C-s)
Site Priority: 1
Ownership: State
Beach Length: 6,000 feet
Total Capacity: 330,000 cubic yards assuming an average disposal width of 150 feet and height of 10 feet
Related Projects: Westport Bars
Distance to Projects: 1,700 - 8,800 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and

disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

Site Number: Wk-S-46.3 (see Figure 7)

Previous Number or Name: none
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Conservation Shorelands (C-s)
Site Priority: 1
Ownership: State
Acreage: 60 acres
Total Capacity: 960,000 cubic yards at 10 feet above existing elevation
Related Projects: Westport Bars
Distance to Projects: 1,700 - 8,800 feet

Environmental, Engineering, and Land Use Issues

Disposal Site Runoff: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands adjacent to the site.

Special Conditions on Use
Conditions on the use of this site shall include, but shall not be limited to, the following:

1) The site shall be diked to prevent material from entering the marshes and swamps adjacent to the disposal area.

Site Number: Wk-B-51.8 (see Figure 7)

Previous Number or Name: 98(B) - CREST Plan
Local Jurisdiction: Wahkiakum County
Local Zoning Designation: Development Shoreland (D-s)
Site Priority: 1
Ownership: Wahkiakum County
Beach Length: 3,100 feet
Total Capacity: 230,000 cubic yards assuming an average disposal width of 200 feet and height of 10 feet
Related Projects: Eureka Bar
Distance to Projects: 500 - 6,000 feet

Environmental, Engineering, and Land Use Issues

Commercial Fishery: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermens' associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

Juvenile Salmon: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

County Line Park: The disposal site is within County Line Park. The project sponsor must coordinate disposal with park officials.

Special Conditions on Use

Conditions on the use of this site shall include, but shall not be limited to, the following:

1) Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fishermans' Protective Union, the N.W. Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.

2) Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

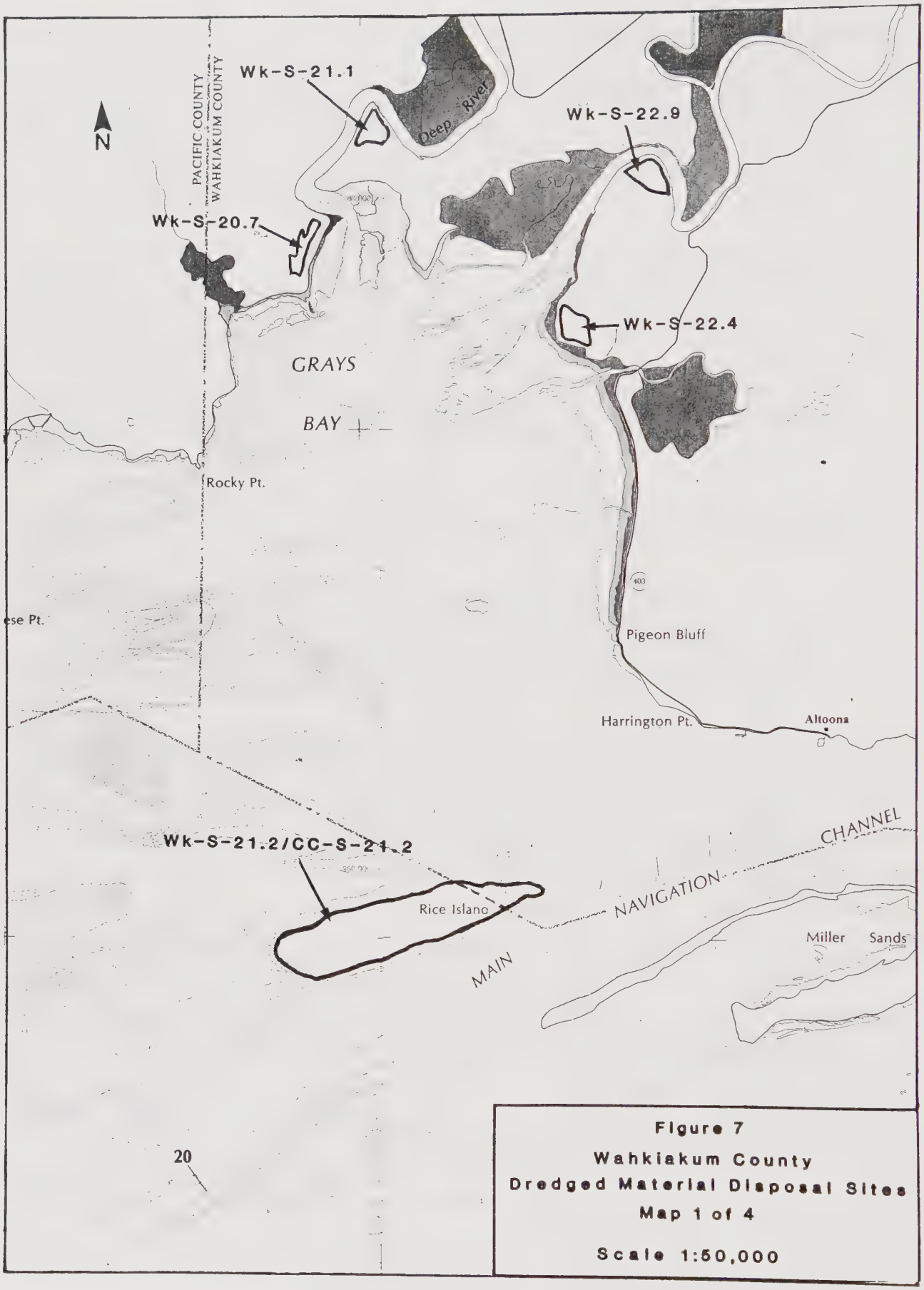
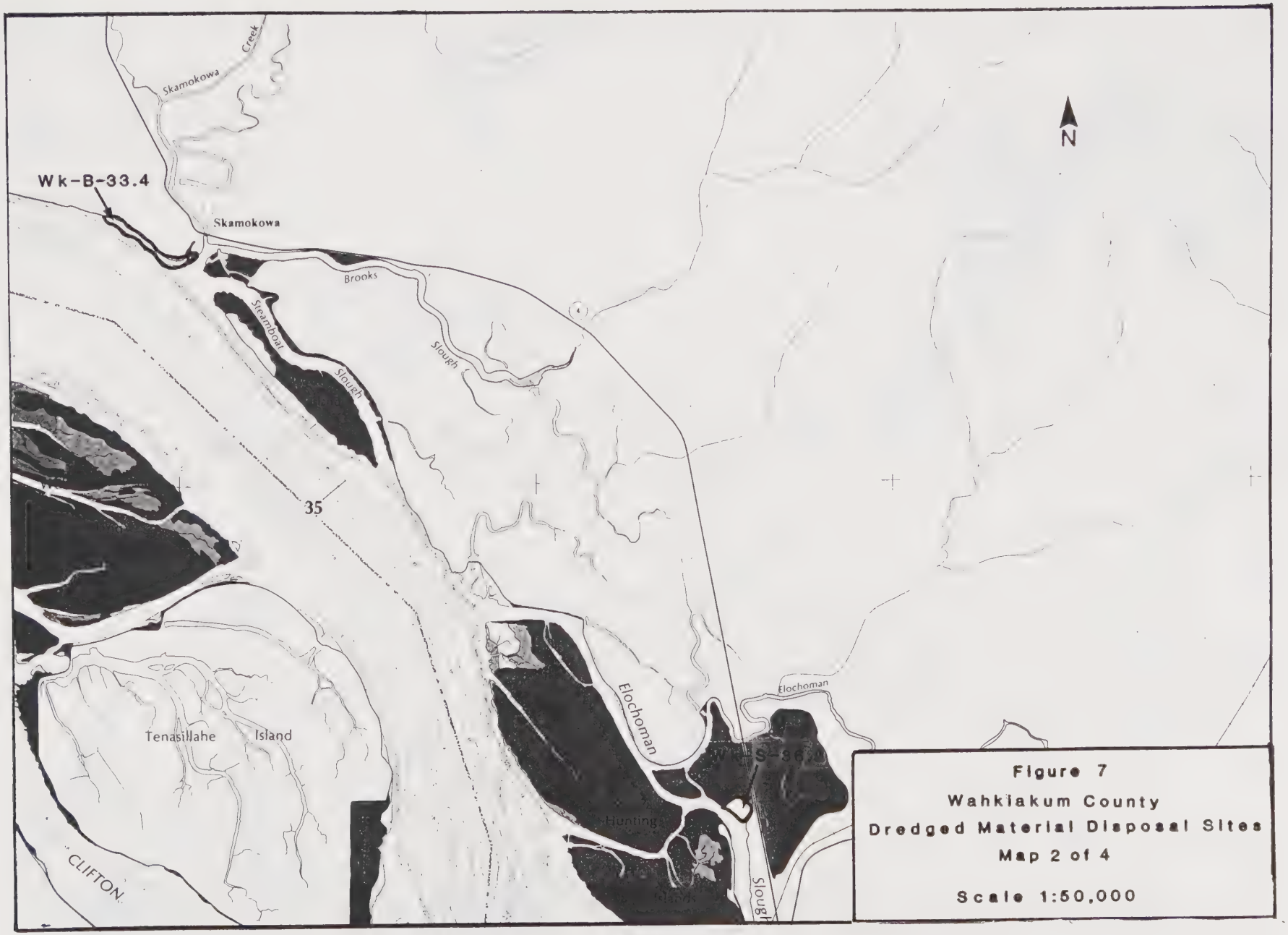


Figure 7
Wahkiakum County
Dredged Material Disposal Sites
Map 1 of 4

Scale 1:50,000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Wk-B-33.4
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Brooks
Slough
Steamboat
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35
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Island
CLIFTON
Elochoman
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Hunting
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Slough
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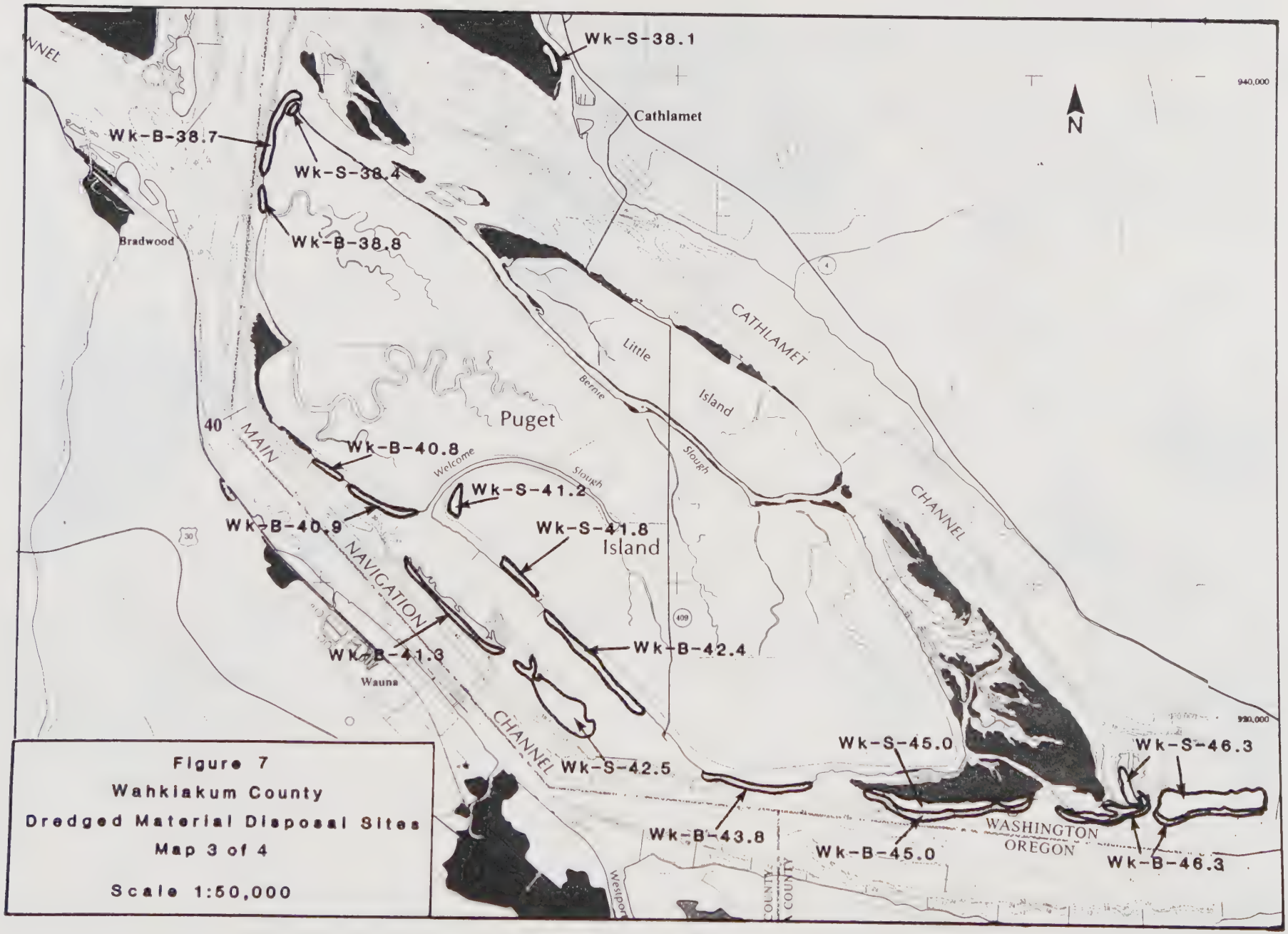
Figure 7
Wahkiakum County
Dredged Material Disposal Sites
Map 2 of 4
Scale 1:50,000


Wk-S-38.1
Cathlamet
Wk-B-38.7
Wk-S-38.4
Wk-B-38.8
Bradwood
N
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CATHLAMET
Little
Island
Bernie
Slough
Puget
Island
Wk-B-40.8
Welcome
Slough
Wk-S-41.2
Wk-B-40.9
Wk-S-41.8
MAIN
NAVIGATION
CHANNEL
Wk-B-42.4
Wk-B-41.3
Wauna
CHANNEL
Wk-S-42.5
Wk-S-45.0
Wk-S-46.3
Wk-B-43.8
Wk-B-45.0
WASHINGTON
OREGON
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920,000
Figure 7
Wahkiakum County
Dredged Material Disposal Sites
Map 3 of 4
Scale 1:50,000

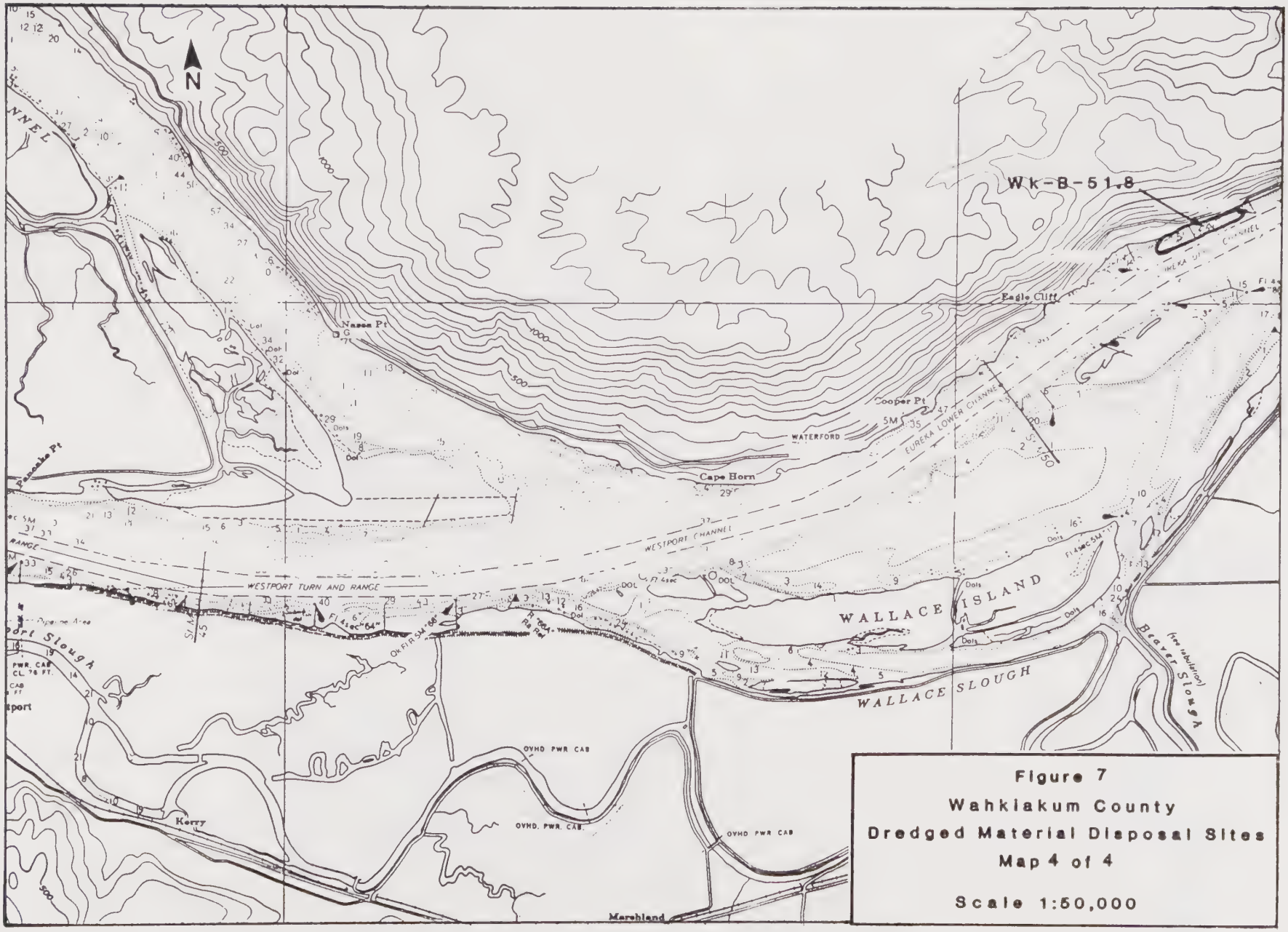


Figure 7
Wahkiakum County
Dredged Material Disposal Sites
Map 4 of 4

Scale 1:50,000

7. SITE AND PROJECT COMPARISON

Designated site capacities and projected dredging needs must be compared in order to determine whether or not the sites in the inventory will be adequate to accommodate expected disposal requirements for at least five years. This section divides the estuary into the following geographic regions to make the necessary comparisons.

Lower Columbia River Shoals/Columbia River Bar
Baker Bay
Hammond
Warrenton
Lewis and Clark River
Youngs Bay/Astoria/Tongue Point
Grays Bay
Rice Island/Miller Sands/Jim Crow Sands
Brookfield/Welch Island Bar and Vicinity
Skamokawa Creek/Brooks Slough
Skamokawa Bar/Puget Island Bar/Bradwood
Cathlamet/Elochoman Slough
Wauna and Lower Westport Bar/Westport Bars/Welcome Slough/Eureka Bar

Within each geographic region, currently ongoing dredging projects and potential projects that may occur within five years are compared with Priority 1 disposal sites. The comparison determines if adequate Priority 1 sites have been designated for at least five years of anticipated dredging. These comparisons are summarized in tables entitled "Ongoing and Near-Term Projected Projects Compared with Priority 1 Sites". All dredging and disposal volumes given in the tables are in cubic yards. In geographic regions where there are additional dredging projects which are anticipated for the more distant future, a second comparison is made to determine if designated priority II sites are adequate to meet their disposal needs. The second comparison is for projects that are unlikely to occur within the next five years but may occur between 5 and 20 years from the date of this plan. These projects are summarized in tables entitled "Projected Future Projects Compared with Priority II Sites". The classification of projects according to when they are likely to occur is for planning purposes only. It in no way restricts when a project may or may not occur.

7.1 LOWER COLUMBIA RIVER SHOALS/COLUMBIA RIVER BAR

7.1.1 Project/Site Comparison

Table 8. Ongoing and Near-Term Projected Projects Compared with Priority 1 Sites

Project	5-Year Requirement	Ocean Sites	CC-E-8.5 2,900,000	CC-E-21.0	Wa-S10.9 500,000
Columbia River Bar	35,000,000	X	X		
Desdemona Shoals	160,000		X		
Flavel Shoal	2,500,000		X	X	X
Upper Sands Shoal	232,000		X	X	
Tongue Pt. Crossing	1,210,000		X	X	

7.1.2 Summary and Conclusions

Most of the material from the Corps maintenance dredging projects listed in Table 8 is disposed of in water. The bulk of Columbia River Bar sediments are placed in ocean disposal sites. When weather and sea conditions prevent the dredge from continuing to work on the bar, it returns to the river to perform relief work on the other shoals listed in Table 8. If the dredge has bar sediments in the hopper when the weather becomes rough, it will dump the sediments at CC-E-8.5 on its way back into the river. A total of about 50,000 cubic yards per year of Bar sediments are disposed of at CC-E-8.5 in this manner. Most of the Desdemona and Flavel Shoal material is placed in CC-E-8.5 during relief dredging. In addition, Wa-S-10.9 may become available for some material from Flavel Shoal. The majority of sediments dredged from Upper Sands and Tongue Point Crossing Shoals are placed in CC-E-21.0.

There is adequate disposal capacity to accommodate anticipated five-year dredging requirements of the Lower Columbia River Shoals and Columbia River Bar.

7.2 BAKER BAY

7.2.1 Project/Site Comparison

See Tables 9 and 10.

7.2.2 Summary and Conclusions

Baker Bay West Channel and Chinook Channel are maintained with pipeline, hopper, and clamshell dredges. The hopper and clamshell dredges dispose of material in water at CC-E-8.5. The 5-year in-water disposal requirement of both Baker Bay West and Chinook Channels amounts to about 231,000 cubic yards. The assigned 5-year capacity of CC-E-8.5 for these projects is 217,000 cubic yards. Because dredging volumes and site capacities are approximate, there may, if fact, be adequate capacity at CC-E-8.5. If CC-E-8.5 is not adequate, the excess material can be placed at the land disposal sites listed in Table 9. The approximate 5-year pipeline dredge/shoreland disposal requirement for Baker Bay West Channel is 500,000 cubic yards. The total available disposal capacity at the shoreland sites listed in Table 9 is 2,500,000 cubic yards. The approximate five-year pipeline dredge/shoreland disposal requirement for Chinook Channel is 315,000 cubic yards. The total available disposal capacity at the shoreland and beach nourishment sites listed in Table 9 is 1,030,000 cubic yards. Pa-S-8.8 is also available for disposal from Chinook Channel provided that, once deposited, the material is trucked away and disposed of elsewhere.

Chinook and Ilwaco Boat Basins dispose at small shoreland sites which are used as borrow sources for fill material. Continued use of these sites for disposal is dependent upon removal of material after disposal.

If Chinook Channel is realigned in the future, shoreland disposal capacity in excess of 1,000,000 cubic yards will probably be required. In addition to the priority II sites listed in Table 10, excess capacity at CC-S-3.1, CC-B-5.8, and CC-S-6.8 may also be available for a realignment.

With the exception of the Chinook Boat Basin, all Baker Bay dredging projects have excess disposal capacity. The boat basin can continue to be maintained using Pa-S-8.8 provided that material is removed after disposal. In addition, Pa-S-8.9 may be available to receive material from the boat basin.

Table 9. Ongoing and Near-Term Projected Projects Compared With Priority I Sites.

Project	5-Year Requirement	Pa-S-3.0 420,000	Pa-S-3.2 85,000	Pa-S-8.8 20,000	CC-S-3.1 2,080,000	CC-B-5.8 450,000	CC-S-6.8 580,000	CC-E-8.5 217,000
Baker Bay West Channel	565,000	X			X			X
Chinook Channel	485,000					X	X	X
Ilwaco Boat Basin	10,000		X					
Chinook Boat Basin	100,000			X				

Table 10. Projected Future Projects Compared With Priority II Sites.

Project	5-Year Requirement	Pa-S-8.1 2,300,000	Pa-S-8.9 250,000
Chinook Channel Realignment*	1,000,000+	X	X

* The Corps of Engineers is currently examining possible ways to decrease maintenance costs in Chinook Channel. Realigning the channel may be considered as one of several possible solutions. As of the date of this Plan the Corps has not made a decision on the possibility of a channel realignment.

7.3 HAMMOND

7.3.1 Project/Site Comparison

Table 11. Ongoing and Near-Term Projected Projects Compared With Priority I Sites

Project	5-Year Requirement	Ha-S-8.0 Ha-S-7.9 45,000	Flow-lane Disposal
Hammond Boat Basin	100,000	X	X

Table 12. Projected Future Projects Compared with Priority II Sites

Project	5-Year Requirement	Ha-S-7.6 150,000	Flow-lane Disposal
Hammond Boat Basin Expansion	272,500	X	X

7.3.2 Summary and Conclusions

Maintenance and expansion of the Hammond Boat Basin presents a problem because of limited disposal capacity. Maintaining the boat basin will most likely require flow-lane disposal because there is little capacity remaining at Ha-S-7.9 and Ha-S-8.0. If flow lane disposal is not approvable, maintenance may be accomplished by using Ha-S-7.6. Use of this site, however, would reduce the disposal capacity available for future basin expansion.

There is presently not enough land disposal capacity for a full expansion of the basin. Disposal requirements for a partial expansion can be handled at Ha-S-7.6. A full basin expansion would require either disposing in the flow lane, filling the existing land sites to a greater elevation, or locating new land disposal sites.

7.4 WARRENTON

7.4.1 Project/Site Comparison

Table 13. Ongoing and Near-Term Projected Projects Compared With Priority I Sites.

Project	5-Year Requirement	Wa-S-10.1 240,000	Wa-S-10.9 657,000	CC-E-8.5 108,000
Skipanon Channel	540,000	X	X	X
Warrenton Boat Basin	minimal	X	X	
Skipanon Boat Ramp	minimal		X	

Table 14. Projected Future Projects Compared With Priority II Sites.

Project	5-Year Requirement	Wa-S-9.4 420,000	Wa-S-10.5 1,130,000	Wa-S-10.7 39,000	Flow Lane Disposal	On-Site Fill
Tansy Point Development	316,000	X			X	X
W. Bank Development	575,000		X	X		X
E. Bank Development	930,000		X			X

7.4.2 Summary and Conclusions

Maintenance of the Skipanon Channel involves both a hopper dredging operation with disposal at CC-E-8.5 and pipeline dredging with upland disposal. The five year hopper dredging volume is about 300,000 cubic yards. This is higher that the assigned capacity of CC-E-8.5. The five year pipeline dredging volume of 240,000 cubic yards can be accommodated at Wa-S-10.9 or Wa-S-10.1. If Wa-S-10.9 is utilized, the disposal needs to be in areas other than those used for Flavel Shoal (see Section 7.1). Wa-S-10.5 may also be available to receive material from the Skipanon if the Wa-S-10.1 cannot be used. The capacity of designated sites is adequate to accommodate five year disposal needs from the Skipanon. The additional dredging needs from the Warrenton Boat Basin and Skipanon Boat Ramp can also be handled at the sites indicated in Table 13.

As stated in the site descriptions, Wa-S-10.1 and Wa-S-10.9 may contain non-tidal wetlands. The presence of wetlands would reduce the sites capacities. In order to ensure that the Priority I sites have adequate capacity for five-year dredging needs, the capacities must be recalculated with the assumption that the sites contain wetlands. As an extreme example, it can be assumed that the presence of non-tidal wetlands would completely preclude

the use of Wa-S-10.1 and reduce the capacity of Wa-S-10.9 by 50%. Under this scenario, the Priority I land site capacity would amount to 328,500 cubic yards. This reduced capacity is still adequate to meet five year disposal needs of the ongoing and near-term projects.

Water dependent development at Tansy Point and the West and East Banks of the Skipanon can be accommodated with existing designated sites shown on Table 14 and on-site fills. Any on-site fill on the East Bank of the Skipanon would deduct from the total available capacity of Wa-S-10.9.

7.5 LEWIS AND CLARK RIVER

7.5.1 Project/Site Comparison

Table 15. Ongoing and Near-Term Projected Projects Compared with Priority I Sites

Project	5-Year Requirement	CC-S-12.9 5,400	CC-S-12.7 69,000
AMCCO Basin	2,000	X	
Lewis Clark River Log Sort Yard	50,000		X

7.5.2 Summary and Conclusions

The designated sites for dredging projects in the Lewis and Clark River are adequate to accommodate five-year disposal requirements.

7.6 YOUNGS BAY/ASTORIA/TONGUE POINT

7.6.1 Project/Site Comparison

See Tables 16 and 17.

7.6.2 Summary and Conclusions

The Port of Astoria Slips and dock faces are currently maintained with a pipeline dredge and flow-lane disposal. Although there are no nearby land disposal sites, material has been barged to CC-S-24.0. This site is still available if the Port undertakes a similar operation. Sites Wa-S-11.7 through Wa-S-12.6 are also available for Port disposal. Use of these sites would require barging the material to the airport area,

Table 16. Ongoing and Near-Term Projected Projects Compared With Priority I Sites.

Projects	5-Year Requirement	As-S-16.3 112,000	As-S-18.2 128,000	As-S-18.7 950,000	CC-S-18.6 845,000	CC-S-18.8 27,000	CC-S-24.0 4,400,000	CC-E-8.5 100,000	Flow lane Disposal	On-Site Fill
Port of Astoria Slips and Dock Face	625,000						X	X	X	X
West Mooring Basin	20,000	X					X			
East Mooring Basin	minimal	X								
Tongue Point Coast Guard Dock	10,000	X					X			
AOS Tongue Pt. Barge Slip	40,000		X							
Water Dependent Dev. Tongue Point	6,625,000		X	X	X		X		X	X
John Day Boat Ramp	minimal					X				

Table 17. Projected Future Projects Compared With Priority II Sites.

Project	5-Year Requirement	Wa-S-11.7 through Wa-S-12.6 2,593,000
Youngs Bay and River and Lewis and Clark Entrance	12,500	X

transferring it to trucks, and subsequently dumping it at the disposal sites. CC-E-8.5 may be available to receive clean sand from the dock faces. Also, when the Port has an approved fill project, material from the slips or dock faces can be placed directly in the fill site.

The West Mooring Basin and Tongue Point Coast Guard Docks are not adjacent to land disposal sites. As-S-16.3 and CC-S-24.0 are available to receive materials barged from these dredging projects. In addition Wa-S-11.7 through Wa-S-12.6 can be used for disposal from the West Mooring Basin using the same method as described above for Port dredging.

The East Mooring Basin is adjacent to As-S-16.3. This is the ideal site for disposal from basin dredging. CC-S-24.0 is also available.

Water dependent development at Tongue Point may require a great deal of dredging. The 5-year requirement given on Table 16 assumes all dredging allowable by the 1981 CREST Mediation Agreement will occur. The Mediation Agreement assumes over 4,000,000 cubic yards of dredged material would be used for fill between the Tongue Point finger piers. The remaining material would be placed at land sites or, possibly, in the flow lane. The most economical land disposal sites adjacent to Tongue Point are As-S-18.2, As-S-18.7, and on-site upland fills. Of these options, only As-S-18.2 has previously been approved as a disposal site under current permitting standards. Concerns about bald eagles may significantly delay proposals for use of As-S-18.7. If these sites are not available or if no on-site fill is needed, material can be barged to CC-S-24.0 or CC-S-18.6. Concern about non-tidal wetlands may reduce the capacity of CC-S-18.6, CC-S-24.0 and As-S-18.7.

Assuming fill between the finger piers would use 4,000,000 cubic yards and, as a result, dredging between the finger piers is reduced by 500,000 cubic yards, the remaining five-year dredging needs at Tongue Point would amount to 2,125,000 cubic yards (6,625,000 minus 4,500,000). The land disposal sites potentially available to reveive this material have a total capacity of 6,323,000 cubic yards. Even if the presence of non-tidal wetlands or other natural resource concerns reduces the available capacity by 50% there would be adequate disposal for Tongue Point. Recent dredging proposals indicate, however, that development at Tongue Point will not involve filling between the finger piers. If this is the case, designated land disposal sites may not be adequate for all possible dredging. Either new sites will have to be designated (for example: Lois and Mott Island, see Appendix B) or there will have to be a greater reliance in flow-lane disposal and on-site upland fills.

7.7 GRAYS BAY

7.7.1 Project/Site Comparison

Table 18. Ongoing and Near-Term Project Projects Compared With Priority I Sites

Project	5-Year Requirement	Wk-S-20.7 240,000	Wk-S-21.1 350,000	Dike Top Sites
Deep River	400,000	X	X	X

Table 19. Projected Future Projects Compared With Priority II Sites

Project	5-Year Requirement	Wk-S-22.9 400,000	Wk-S-22.4 307,000	Dike Top Sites
Grays Bay	250,000		X	X
Grays River	410,000	X	X	X

7.7.2 Summary and Conclusions

Priority I sites have adequate capacity for dredging Deep River if dredging is required to allow for use of the designated industrial site located north and east of Wk-S-21.1. Dredged material may also be placed within the industrial site if a fill is needed and approved by state and federal regulatory agencies. Priority II sites have adequate capacity for Grays Bay and River channel dredging.

7.8 RICE ISLAND/MILLER SANDS/JIM CROW SANDS

7.8.1 Project/Site Comparison

Table 20. Ongoing and Near-Term Projected Projects Compared With Priority I Sites

Project	5-Year Requirement	CC-E-21.0	Wk-S-21.2/ CC-S-21.2 6,900,000	CC-S-23.1 415,000	CC-S-23.5 1,580,000	CC-B-27.2 300,000	CC-S-27.2 2,240,000	Flow Lane Disposal
Miller Sands Bars	4,250,000	X	X	X	X			
Pillar Rock Bars	1,925,000	X				X	X	X

7.8.2 Summary and Conclusions

Maintenance dredging at Miller Sands and Pillar Rock bars involves both in-water and land disposal (Table 20). The total five-year in-water disposal volume will amount to 2,460,000 cubic yards for these dredging areas. This material will either be placed in CC-E-21.0 or in the flow lane. Sites CC-B-23.1 and CC-S-23.5 (total capacity 1,995,000 cubic yards) and Rice Island (Wk-S-21.2 / CC-S-21.2) will receive about 2,475,000 cubic yards from Miller Sands Bar over a five-year period. Sites CC-B-27.2 and CC-S-27.2 (total capacity 2,540,000 cubic yards) will receive about 1,240,000 cubic yards from Pillar Rock Bars over a five-year period.

Designated in-water and land disposal sites are adequate to accommodate the five-year disposal needs from Miller Sands and Pillar Rock Bars.

7.9 BROOKFIELD/WELCH ISLAND BAR AND VICINITY

7.9.1 Project/Site Comparison

Table 21. Ongoing and Near-Term Projected Projects Compared With Priority I Sites

Project	5-Year Requirement	CC-S-31.2 425,000	Flow-Lane Disposal
Brookfield/ Welch Island Bars	255,000	X	X
Other Channel Maintenance	unknown	X	X

7.9.2 Summary and Conclusions

Sites in the Brookfield/Welch Island Bars area are adequate to accommodate anticipated dredging needs.

7.10 SKAMOAKWA CREEK/BROOKS SLOUGH

7.10.1 Project/Site Comparison

Table 22. Ongoing and Near-Term Projected Projects Compared With Priority I Sites

Project	5-Year Requirement	Wk-B-33.4 250,000
Skamokawa Creek	20,000	X

Table 23. Projected Future Projects Compared With Priority II Sites

Project	5-Year Requirement	Dike-top Sites
Brooks Slough	30,000	X

7.10.2 Summary and Conclusions

The beach nourishment site, Wk-B-33.4, is adequate to accommodate the five-year dredging needs of Skamokawa Creek.

It is unclear if there is enough disposal capacity to meet dredging requirements in Brook Slough. The material from the Slough would be too fine to place on the beach nourishment site. There may be a site available within Skamokawa Vista Park to accommodate some of the disposal needs. The dikes along the southern shore of Brooks Slough appear to provide a good disposal option if the site in the park is not available or not large enough. Disposal would serve to reinforce the dikes.

7.11 SKAMOKAWA BAR/PUGET ISLAND BAR/BRADWOOD

7.11.1 Project/Site Comparison

See Table 24.

7.11.2 Summary and Conclusion

Maintenance dredging of Skamokawa and Puget Island Bars involves flow-lane, beach nourishment, and land disposal. The Corps is attempting to reduce the hopper dredging/flow lane disposal to a minimum and rely more on land and beach nourishment disposal sites. The total 5-year flow-lane disposal volume for the bars amounts to 1,145,000 cubic yards. The total five year pipeline dredging volume from Skamokawa Bars amounts to 500,000 cubic yards. Site CC-B-36.8 and Wk-B-33.4 (capacity 340,000 cubic yards) are available to receive most of the material removed from Skamokawa Bar by pipeline dredge. Unless a new site if found, the remaining material will have to continue to be placed in the flow lane. The total five year pipeline dredging volume from Puget Island Bar amounts to 1,320,000 cubic yards. The sites associated with Puget Island Bar have a total capacity of 1,546,000 cubic yards (Table 24).

Designated in-water and land disposal sites are adequate to accommodate the five-year disposal needs of Skamokawa and Puget Island Bars and water dependent development at Bradwood.

Table 24. Ongoing and Near-Term Projected Projects Compared With Priority I Sites.

Project	5-Year Requirement	CC-B-36.8 90,000	CC-S-38.3 595,000	CC-B-38.3 175,000	CC-S-38.9 420,000	Wk-B-33.4 250,000	Wk-B-38.7 216,000	Wk-S-38.4 128,000	Wk-B-38.8 62,000	Flow Lane Disposal
Skamokawa Bars	1,500,000	X				X				X
Puget Island Bar	1,770,000	X	X	X	X		X	X	X	X
Bradwood Development	50,000				X					

7.12 CATHLAMET/ELOCHOMAN SLOUGH

7.12.1 Project/Site Comparison

Table 25. Ongoing and Near-Term Projected Projects Compared With Priority I Sites

Project	5-Year Requirement	Wk-S-36.9 120,000	Wk-S-38.1 58,000	Cottonwood Island
Elochoman Slough Log Sort Yard	10,000	X		X
Cathlamet Boat Basin	Minimal		X	

7.12.2 Summary and Conclusions

Designated Priority I sites are adequate to accommodate the 5-year dredging requirements of the Elochoman Slough Log Sort Yard and Cathlamet Boat Basin assuming that Wk-S-36.9 and Wk-S-38.1 do not contain wetlands. At present, material dredged from Elochoman Slough is barged to Cottonwood Island, near Longview, WA. If Wk-S-26.9 is not available for disposal, Cottonwood Island can continue to handle the dipsosal need. If Wk-S-38.1 is not available for disposal from the boat basin, an alternative site will have to be located. Possible alternatives included barging the material to Cottonwood Island or a closer land site, transporting the material to dikes in the vicinity to be used for maintenance, or locating a new land disposal site.

7.13 WAUNA AND LOWER WESTPORT BAR/WESTPORT BAR/WELCOME SLOUGH/EUREKA BAR

7.13.1 Project/Site Comparison

See Table 26.

7.13.2 Summary and Conclusions

Maintenance dredging on the bars listed in Table 26 involves flow-lane, beach nourishment, and land disposal. The five year hopper dredging and flow-lane disposal requirement at Wauna and Lower Westport Bars amounts to 470,000 cubic yards. The remaining 1,070,000 cubic yards is disposed of on land and beach nourishment sites. The sites listed in Table 26 available for this disposal have a total capacity of 3,303,500 cubic yards. The five year hopper dredging and flow-lane disposal requirement at Westport Bars amounts to 1,040,000 cubic yards. The remaining 2,705,000 cubic yards is disposed of on land and beach nourish-

Table 26. Ongoing and Near-Term Projected Projects Compared With Priority I Sites.

Project	5-Year Requirement	Wk-B-40.8 33,000	Wk-B-40.9 92,500	Wk-S-41.2 85,000	Wk-B-41.3 Wk-S-41.8 248,000	Wk-S-42.5 Wk-B-42.4 870,000	CC-S-42.9 Wk-B-43.8 CC-B-44.0 1,960,000	Wk-B-45.0 Wk-S-45.0 750,000	Wk-B-46.3 Wk-S-46.3 1,290,000	Wk-B-51.8 230,000	Flow Lane Disposal
Wauna and Lower Westport Bars	1,540,000	X	X		X	X	X				X
Westport Bars	3,745,000							X	X		X
Eureka Bar	225,000									X	X
Welcome Slough	unknown			X			X				
Westport Slough	unknown						X				

ment sites. The sites listed in Table 26 available for this disposal have a total capacity of 2,040,000 cubic yards. Table 26 lists sites within the estuary only. Several beach nourishment and land disposal sites in Columbia County, OR, are available to receive the remaining material from Westport Bars. Eureka Bar maintenance involves primarily flow-lane disposal. Wk-B-51.8 is available in the event that the bar is dredged with a pipeline dredge.

The total disposal needs of Welcome and Westport Sloughs has not been estimated. The available sites most likely have enough capacity to accommodate dredging needs.

APPENDIX A

DREDGING AND DREDGED MATERIAL DISPOSAL OPTIONS

DREDGING OPTIONS

Dredges available in the Pacific Northwest today include pipeline dredges, sea-going hopper dredges, clamshell and barge dredges, and land-based equipment such as drag lines and back hoes. Pipeline and hopper dredges are commonly used in larger dredging projects such as navigation channel maintenance by the U.S. Army Corps of Engineers or port development and maintenance. Clamshell and barge equipment is typically involved in smaller port and private dredging jobs but is sometimes used in larger navigation channel maintenance jobs. Land-based equipment is usually used for very small projects such as maintenance dredging at boat ramps.

Pipeline Dredges

Pipeline dredging plants have been developed specifically for dredging of bed sediments from aquatic areas. Pipeline dredges usually consist of a large centrifugal pump mounted on a non-propelled, specially designed barge. Bottom materials are pumped up through a large diameter suction pipe to the barge, and then on to the disposal area through a pipeline. The dredging end of the suction pipe is equipped with a revolving cutter-head that breaks up the bottom for easier transport. The pipeline is floated on pontoons, extending as far as 4,000 to 5,000 feet to the disposal site. Greater piping distances can be attained through the use of booster pumps.

The major limitation of the pipeline dredge is that disposal areas must be relatively close to the dredging operations. The main advantage is the large volume of material that can be dredged in a short period of time.

Pipeline dredges are typically classified by the diameter of their discharge pipeline. Dredges available in the Pacific Northwest range from a minimum size of 8 inches to a maximum of 30 inches. Pumping distance and production capability of the pipeline dredges is directly related to pipeline diameter; larger diameter yields greater discharge distances and higher production capability.

Production Capabilities

The effects of pipeline size, length and dredge horsepower prevent consideration of dredge production in the form of a simple multiplication factor. The Corps of Engineers devised a table that lists the production rate for each size dredge for three critical pipe lengths based on pumping free flowing sand (South Atlantic Division Circular 1130-2-1, February 4, 1975). The 1979 CREST Plan made minor revisions to the Corps of Engineer's production rate estimates based on consultant experience. These rates are shown in Table A1.

Table A-1. Pipeline Dredge Production Capabilities

Dredge Size	Pipe Length	CY/ HR	Pipe Length	CY/ HR	Pipe Length (With Booster)	CY/ HR
8"	1,500	180	2,500	100	3,000	150
12"	2,500	270	4,500	180	7,500	240
16"	3,500	500	6,000	330	10,000	445
20"	4,000	800	7,000	520	11,500	780
24"	5,000	1,200	7,500	780	14,500	1,060
30"	6,500	1,800	10,500	1,170	17,000	1,590

The production rates are modified by the bank factor, factor, and booster factor when booster pump is required. The speed of the dredge's advance may control production when the bank or cut height is less than the cutter-head diameter. In general, maintenance dredging activity will have shallow bank heights with a bank factor less than 1.0, while new work activity will have deep bank heights and a bank factor approaching 1.1. The dredgeability of the material also has impacts upon production rate. The production capabilities in Table A-1 were based on free flowing Columbia River sands, and the factor for sand is 1.0. Finer sediments are given a value greater than 1.0 and rock or shale materials have a factor less than 1.0. The operation of an additional pumping plant in the discharge line tends to decrease production. This decrease is generally more severe at the start of a job and decreases after a prolonged dredging operation time.

No other production control factors were considered in this analysis. Actual bid estimates, however, would take into account narrow channel design, debris and subsequent pump clearings, minor operating repairs, and numerous other factors that would tend to decrease net production time.

Cost Factors for Pipeline Dredging

The U.S. Army Corps of Engineers has attempted to standardize their dredging estimation procedures on a nationwide level. An Engineering Regulation, ER 1110-2-1300, dated February 15, 1978, provides a "cookbook" approach to assist the district offices in preparing government estimates involving pipeline dredging. The following discussion incorporates the Corps approach and provides local factors to improve on the more general nationwide aspect.

This Plan will not provide a detailed cost information suitable for contract bid purposes, but does provide general data and a relative value to use in comparison of alternate disposal

sites and dredging plant.

The numerical values in the pipeline dredging relative costs presented in Table A-2 compare costs for pumping distances and various dredge sizes, assuming other factors are constant. With this table, two or more disposal sites at varied distances from the dredging can be compared. The table also suggests the pumping distance capability of the various sized pipelines.

When the production rates are established for various pipeline lengths, assumptions must be made for the amount of material to be dredged. The figures in Table A-2 were based on a one time average dredging project quantity ranging from 60,000 cubic yards to 310,000 cubic yards in the Lower Columbia River vicinity. Substantially higher dredging quantities will tend to cause the relative cost factor range to decrease, or in other words to cause all values to approach 1.0.

Mobilization and demobilization of the dredging plant is a major fixed cost that is independent of the quantities to be

Table A-2. Pipeline Dredging Relative Costs

Dredge Size	Pumping Distance	Relative Costs	
		Maintenance	New Work
8"	1,500	0.765	0.66
	2,500	1.225	0.945
	4,000 w/booster	1.15	0.895
12"	2,500	0.81	0.815
	4,500	1.06	0.99
	7,500 w/booster	1.175	1.035
16"	3,500	1.04	0.91
	6,000	1.355	1.17
	10,000 w/booster	1.465	1.19
20"	4,000	0.955	0.82
	7,000	1.24	1.025
	12,000 w/booster	1.36	1.08
24"	5,000	0.985	0.82
	7,500	1.245	1.00
	14,500 w/booster	1.40	1.08
30"	6,000	0.965	0.785
	10,500	1.205	0.945
	17,000 w/booster	1.41	1.085

dredged. Thus, mobilization costs have a greater impact on small projects. The figures in Table A-2 assume that the dredge plant would be moved onto the project from Portland, and would not require an ocean tow.

Hopper and Clamshell Dredges

Sea-going hopper dredges and clamshell dredges with barges provide an alternative mode to pipeline dredging. The production rate for clamshell with barge is based on work at Chinook, Astoria, Coos Bay, and Portland Harbor in 1984 and 1985. The production rate for the hopper dredge is based on values provided by the Army Corps of Engineers for the dredge Essyons.

The dredgeability of the material, as with the pipeline dredge, affects production rate. In general, the hopper dredge will not load as well with finer sediments because the overflow will carry fines, that have settling rates slower than sand, out of the hopper. It will take longer for the hopper dredge to load and will reduce the production rate. A clamshell, however, can overload in fine sediments on each grab and subsequently increase production. Neither clamshell nor hopper dredge is as effective in hardpan or rock.

A hopper dredge equipped with hydraulic pump and trailing dragheads can out produce a clamshell while at the dredging site. The hopper dredge must leave the dredging site to dispose of its loaded sediments. Thus the total production rate is decreased by the time to and from the disposal site. A clamshell can continue to dredge material into one barge while a second barge is travelling to the disposal site, releasing sediments and returning to the dredge site. A two barge disposal operation where each barge has 2,000 cubic yards capacity or greater can have an approximate 20 mile run to the disposal site, and still return before the second barge is filled. For this analysis, an approximate 12 to 15 mile haul to the disposal site is the break-even point on relative costs for hopper dredge versus a clamshell with two 2,000 cubic yard disposal barges.

In general, mobilization costs for locally available hopper or clamshell equipment would be less than for a pipeline dredge because less attendant plant is required, and equipment set-up at the site is quicker.

Shoreland disposal sites are possible for clamshell dredging but require double pumping or rehandling of the sediments. Haul distance for a clamshell with 2 barge operation is effectively reduced by a factor of 50% and cost for a second clamshell to rehandle material at the disposal site is added.

The relative cost factors for sea-going hopper dredge and clamshell with barge equipment are given in Table A-3.

Table A-3. Clamshell and Hopper Dredge Relative Costs

Type of Dredge	Distance to Disposal Site	Relative Cost
Clamshell	Up to 15 miles	1.90 - 2.80
Hopper Dredge	2 miles	.83 - 1.10
	10 miles	1.10 - 2.40
	15 miles	2.40 - 3.00

DREDGED MATERIAL DISPOSAL OPTIONS

There are several disposal options available for dredging projects in the Columbia River Estuary. These options are broadly classified into land (including shoreland) and in-water disposal. Land options include disposal to reinforce flood control dikes. In-water options include flow-lane disposal, placing material in a temporary in-water holding site or sump for subsequent rehandling, estuarine open water disposal, ocean disposal, beach nourishment, and creation of new upland areas. Table A-4 lists disposal options and outlines general advantages and disadvantages of each.

Upland Options

Shoreland Sites

The major factors controlling choice of a shoreland site are cost, land use, and availability. Increased distance from the dredging operation and extensive site preparation both increase costs. The sediment to be deposited must be suitable for the future use of the site: for example, fine sediments will not always produce stable land for industrial development while coarse sands may not enhance productive farmland or be useful for dike maintenance.

The principal engineering consideration is the degree of confinement that the site and the proposed deposition will require. The Corps of Engineers has developed specific guidelines for designing containment areas at the disposal site which both maximize the site's capacity and control effluent quality. The guidelines address such technical issues as possible geochemical changes after disposal that cause release of contaminants and effective dewatering of the sediments. In general, diking around the site offers maximum confinement while berming, the creation of mounds of sediment during deposition, may suffice for certain sediments.

Dike Disposal

Dredged material disposal on dikes may prove cost effective for the combined goals of dike maintenance and disposal of otherwise unused dredged materials. The major environmental consideration is that the material be disposed in such a way that it not slough into productive aquatic areas. The major engineering issues are effective dewatering of the sediments and careful dike stabilization, preferably through revegetation, after disposal.

In-Water Disposal Options

In-water disposal options include flow-lane disposal, placing in a temporary in-water holding site or sump for subsequent rehandling, estuarine open water disposal, ocean disposal, beach nourishment, and creation of new upland areas. Table A-4 summarizes advantages and disadvantages of each option.

Regardless of the type of in-water disposal, placing dredged materials in the aquatic area raises several key concerns, including sediment and water quality, sediment transport, water circulation, and impacts to fisheries and biological communities. Sediments placed in water must meet sediment quality regulations established by the Environmental Protection Agency and state water quality agencies. The majority of sediment disposed in the estuary's aquatic area consists of coarse, clean sand dredged from maintained navigation channels. This material usually meets the water and sediment quality standards. After sediment is placed in an in-water disposal site, some or all of it is eventually transported to other areas, potentially resulting in adverse impacts to shallow productive areas and fishing areas and increasing dredging requirements on other projects. The sediment transport patterns at in-water sites need to be assessed prior to disposing. Disposing of material in-water usually creates a mound or otherwise obstructs water flow. This results in changes in water circulation patterns in the vicinity of the disposal site. The circulation changes can have detrimental effects: for example, unexpected erosion or accretion can occur downstream from the disposal site. Conversely, the changes can sometimes be beneficial: for example, the scouring of the channel can be increased. In all cases, the potential effects which may result from circulation changes need to be assessed prior to undertaking disposal. In-water disposal often results in direct smothering of bottom organisms at the disposal sites and indirect impacts to organisms downstream from the sites. Disposal often impacts commercial fisheries by decreasing the size and depth of gillnet drifts, placing snags in fishing areas, and obstructing fishing access with dredging equipment.

Flow-lane Disposal

Flow-lane disposal involves placing material in or adjacent

to a channel where the material will continue its downstream movement. Material is usually placed adjacent to the main navigation channel in 35 to 60 feet of water. In the Columbia River, this depth regime is often an area where sediment moves slowly from the site in the bedload. In this way, permanent mounding is avoided as might occur if the site were shallow, and rapid sediment transport to downstream areas of the navigation channel does not occur, as in deeper scour-holes. Flow-lane disposal is undertaken by hopper, pipeline, and clamshell/bucket dredges.

Sump Disposal

Sump disposal is defined as the placement of dredged materials in a temporary in-water holding site with subsequent rehandling to an upland area. The only such disposal area of this type currently operating in the estuary is Harrington Sump/Rice Island (sites CC-E-21.0 and Wk-S-21.2/CC-S-21.2). Dredged material is disposed of in the sump primarily from hopper dredges. When a sufficient quantity of material accumulates in the sump, it is subsequently pumped with a pipeline dredge onto Rice Island.

Estuarine Open Water Disposal

Estuarine open water disposal involves placement of material in open water areas other than those used for flow lane disposal. Area D (site CC-E-8.5) is the only open water disposal site currently in the estuary. Most of the material placed in Area D tends to move upstream. Disposal at the site occurs from hopper or clamshell dredging projects.

Ocean Disposal

Ocean disposal involves the transport of dredged materials over the Columbia River Bar to designated ocean disposal sites. Material is transported by hopper dredges or barges. Ocean sites are designated by the Environmental Protection Agency in conjunction with other resource management agencies.

Beach Nourishment

Beach nourishment is the placement of material on a beach and in the aquatic areas adjacent to the beach. Beach nourishment disposal is undertaken on eroding beaches and serves a dual purpose of disposing of dredged materials and restoring the beaches to their historic profile. Subsequent to disposal, the beach must be graded at a uniform and gentle slope to minimize fish stranding problems and provide a safe beach for users.

Creation of New Upland Areas

Disposal for the creation of new upland includes creating dredged material islands, expanding existing islands, and placing material on a beach or shore that is not eroding. Designation of sites for this type of disposal typically involves years of research and agency coordination. Since no new upland creation disposal action has yet been approved, this plan does not designate upland creation sites.

Table A-4: Disposal Options

Disposal Option	Advantages	Disadvantages
Land disposal in diked sites	can be used to enhance industrial sites or farmland	number of sites and total disposal capacity is limited
	can be stockpiled for use in dike maintenance or development projects	sites usually have to be very near to the dredging project
	provided that wetlands are not filled, environmental impacts are generally considered to be lower than those associated with in water disposal	use of the site for development, etc., is delayed while the dredged is dewatering
		costly site preparation is usually required prior to disposal
	contaminated sediments can be isolated from the aquatic environment	usually requires a significant expenditure for property acquisition (majority of available sites are in private ownership)
Dike disposal	dikes are maintained and enhanced	disposal is generally limited to clamshell type operations
		disposal often requires double handling of dredged material
	provided that wetlands are not filled, environmental impacts are generally considered to be lower than those associated with in-water disposal	dredged sediment has to be spread over a large area
		dikes are generally remote from the dredging operation
		there are limitations on the types of sediment suitable for dike maintenance

Table A-4. continued

Flow-lane disposal	presents an inexpensive disposal option available to most types of dredges (hopper, pipeline, clamshell)	sediments suitable for flow-lane disposal are generally limited to coarse-grained clean sand impacts to aquatic resources can be high use of this option usually requires extensive sediment testing and ecological monitoring there are often uncertainties regarding the transport and final fate of the sediments
Sump disposal	presents an inexpensive disposal option available to most types of dredges environmental impacts are reduced by removing material from the aquatic area	sediments suitable for disposal are generally limited to coarse-grained clean sand some material placed in the sump is transported away prior to rehandling
Estuarine open water disposal	presents an inexpensive disposal option available to most types of dredges can be used to help control and direct river flow for the purpose of increasing channel self-scouring	impacts to aquatic resources are generally high there are significant uncertainties regarding the transport and final fate of the sediments

Table A-4. continued

		sediments suitable for disposal are generally limited to coarse grained clean sand use of this option usually requires extensive sediment testing and ecological monitoring
Ocean Disposal	presents no direct impacts to the estuarine ecosystem	disposal is restricted due to potential impacts to the ocean ecosystem periodic rough sea and weather conditions make use of the sites unpredictable use of the sites is prohibitively expensive for projects in the upper estuary
Beach Nourishment	presents an inexpensive disposal option for pipeline dredging can enhance recreational use of a beach can help offset beach erosion	disposal is limited to coarse-grained clean sand the transport and final fate of the sediment is often uncertain
	can be used to help control and direct river flow for the purpose of enhancing channel self-scouring	beach nourishment involves fill in intertidal and subtidal areas

Table A-4. continued

Creation of upland areas	can be used to create or enhance wildlife habitat	significantly alters or reduces aquatic habitat
	can be used to help control and direct river flow for the purpose of enhancing channel self-scouring	involves fill in subtidal and intertidal areas
	usually offers an inexpensive disposal option for very large quantities of material	effect on water circulation, sediment transport, and adjacent accretion and erosion are uncertain

APPENDIX B

ADDITIONAL DREDGED MATERIAL DISPOSAL SITES

The following inventory lists additional sites which are not included in the main inventory but may be needed for some future dredging operation when designated sites become filled to capacity or otherwise unavailable for use. These sites are not listed in the main inventory because they have significant environmental, engineering, or land use constraints on their use and they are not needed for meeting anticipated 5-year disposal needs. The sites are therefore not appropriate for designation in local comprehensive plans or shoreline master programs. This inventory is intended to record possible sites for future consideration and list the primary constraints that need to be addressed prior to using the sites.

The additional sites inventory is contained in the following tabular summary, maps (Figures B1 through B-5), and footnotes. The site numbering system and other information in the tabular summary is similar to the information in the main site inventory. The site capacities assume a final elevation of 10 feet above existing ground levels for land sites and an average disposal width of 100 feet and height of 10 feet for beach nourishment sites. The footnotes to the table describe the major constraints with the use of each site.

Site #	Other Designations	Local Jurisdiction	Zone	Ownership	Acerage	Capacity	Related Projects	Distance to Projects (ft)	Map #	Footnote #
CC-S-4.3	5(S)	Clatsop Co.	CS	Federal	95	3,040,000	Baker Bay West Channel Chinook Channel Realignment	4,500-12,500	1	1
Pa-S-7.8	8(S)	Pacific Co.	R-s	Private	80	1,250,000	Chinook Channel Maintenance Chinook Channel Realignment Baker Bay West Channel	5,000-8,750	1	2
Wa-S-9.5	16(S)	Warrenton	I3	City of Warrenton	18	144,000	Tansy Point Development	200 800	2	3,4
Wa-S-9.8	18(S)	Warrenton	I3	Clatsop Co. & Private	25	400,000	Tansy Point Development	800-1,700	2	3,4
Wa-S-9.9	19(S)	Warrenton	R10	Private	15	240,000	W.Bank Skipanon Development Skipanon Channel Maintenance Warrenton Boat Basin Skipanon Channel Upstream of Bridge	3,750 3,750-5,000 4,600-5,400 5,000-7,000	2	2
Wa-S-10.0	20(S)	Warrenton	I2	Private	24	384,000	Skipanon Channel Skipanon Channel Upstream of Bridge Warrenton Boat Basin W.Bank Skipanon Development	2,000-3,750 4,200-5,800 3,750-4,200 3,300	2	2
Wa-S-9.6	21(S)	Warrenton	RM-1 R10	Private	18	288,000	Skipanon Channel Skipanon Channel Upstream of Bridge Warrenton Boat Basin W.Bank Skipanon Development	3,750-6,250 3,300-4,600 3,300-4,200 5,400	2	2
Wa-S-10.2	23(S)	Warrenton	C4; R10	Private	128	2,016,000	Skipanon Channel Skipanon Channel Upstream of Bridge Warrenton Boat Basin E.&W.Bank Skipanon Development	2,000-7,500 400-1,700 1,700-2,500 7,900	2	2
Wa-S-11.0	26(S)	Warrenton	C2	Private	13	208,000	Skipanon Channel Skipanon Channel Upstream of Bridge Warrenton Boat Basin E.Bank Skipanon Development	4,200-7,100 5,400 6,250 4,200-5,000 7,500	2	4,5,6

Site #	Other Designations	Local Jurisdiction	Zone	Ownership	Acreage	Capacity	Related Projects	Distance to Projects (ft)	Map #	Footnote #
Wa-S-11.2	27(S)	Warrenton	C2	Private	9	144,000	Skipanon Channel Skipanon Channel Upstream of Bridge Warrenton Boat Basin E.Bank Skipanon Development	5,000-7,900 5,400-6,250 4,200-5,000 8,500	2	4,6
CC-S-19.0	40(S)	Clatsop Co.	NS	State	29	468,000	Tongue Point Development	1,250-5,4000	3	7,9
CC-S-19.5	none	Clatsop Co.	NS	Federal			Tongue Point Development		3	7,9
Wk-B-25.3	57(B)	Wahkiakum Co.	Ca	Private		62,000	Pillar Rock Bar	800-14,600	4	8
Wk-B-26.0	58(B)	Wahkiakum Co.	Ca	Private		77,000	Pillar Rock Bar	400-9,200	4	8
Wk-B-26.8	61(B); W-26.8	Wahkiakum Co.	Ca	Private		39,000	Pillar Rock Bar	1,250-8,700	4	8
Wk-B-27.6	62(B)	Wahkiakum Co.	Ca	Private		62,000	Pillar Rock Bar	1,250-11,200	4	8
Wk-B-27.8	63(B)	Wahkiakum Co.	Ca	Private		62,000	Pillar Rock Bar	1,250 14,200	4	8
Wk-B-28.2	W-28.2	Wahkiakum Co.	Ca	Private		62,000	Pillar Rock Bar	1,700-15,400	4	8
CC-S-29.0	O-29.9	Clatsop Co.	CS	Federal			Brookfield-Welch Is.Bars	2,900-16,200	5	7
Wk-S-35.0	69(S)	Wahkiakum Co.	Cs	Wahkiakum Co.	75	1,200,000	Port Development	400-800	5	2

Footnotes to Additional Sites Inventory

The following footnotes describe the principal environmental, engineering, and land use constraints on the use of each site listed the additional sites inventory.

1. The southern half of West Sand Island has been proposed for designation as a National Natural Heritage Area. This area contains the only remaining example of a fescue-bluegrass native, unstabilized sand dune community in Oregon or Washington.

2. This site consists primarily of wetlands. Disposal at the site would require state and Federal approval for placement of fill in the wetlands and, most likely, would require a mitigation action to compensate for the habitat losses.

3. The site was formerly designated in Warrenton's Comprehensive Plan but has been removed to allow for industrial development. Portions of the site that do not contain wetlands are suitable for dredged material disposal provided that the disposal does not adversely affect existing or proposed development.

4. The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and state approval to fill the wetlands. The Federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

5. The site was formerly designated in Warrenton's Comprehensive Plan but has been removed to allow for commercial development. Portions of the site that do not contain wetlands may be suitable for dredged material disposal provided that the disposal does not adversely affect existing or proposed development.

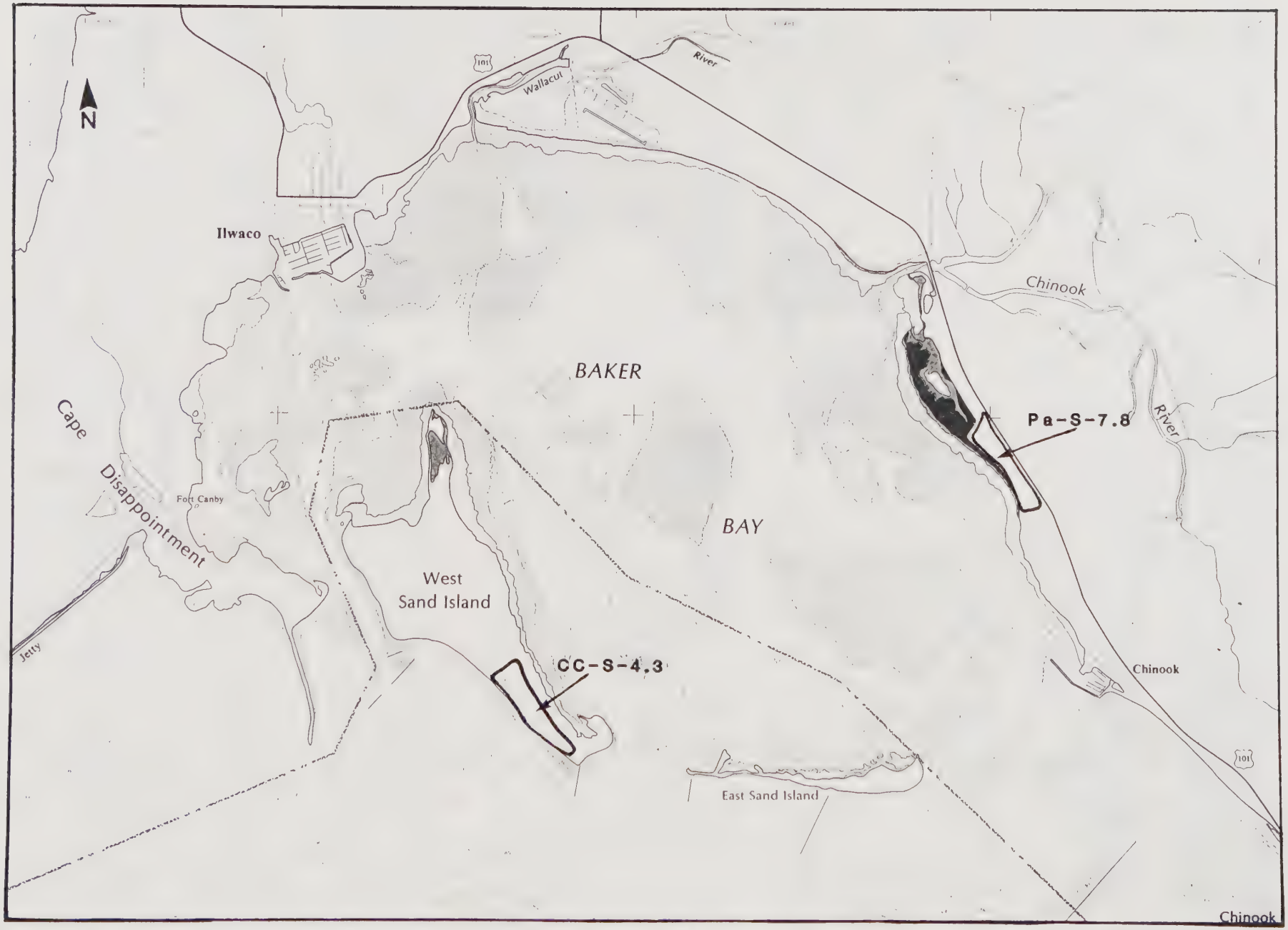
6. The site is much farther from dredging projects than other, more suitable disposal sites. In addition, it is landward of a road; therefore, its use may present drainage problems through existing culverts.

7. This site is within a principal foraging area for bald eagles. It is also located in the Lewis and Clark National Wildlife Refuge. The U.S. Fish and Wildlife Service would have to be consulted under the Endangered Species Act to determine if disposal at the site is allowable and, if so, what conditions must be met to minimize impacts to bald eagles.

8. The beach nourishment site is not required to meet the

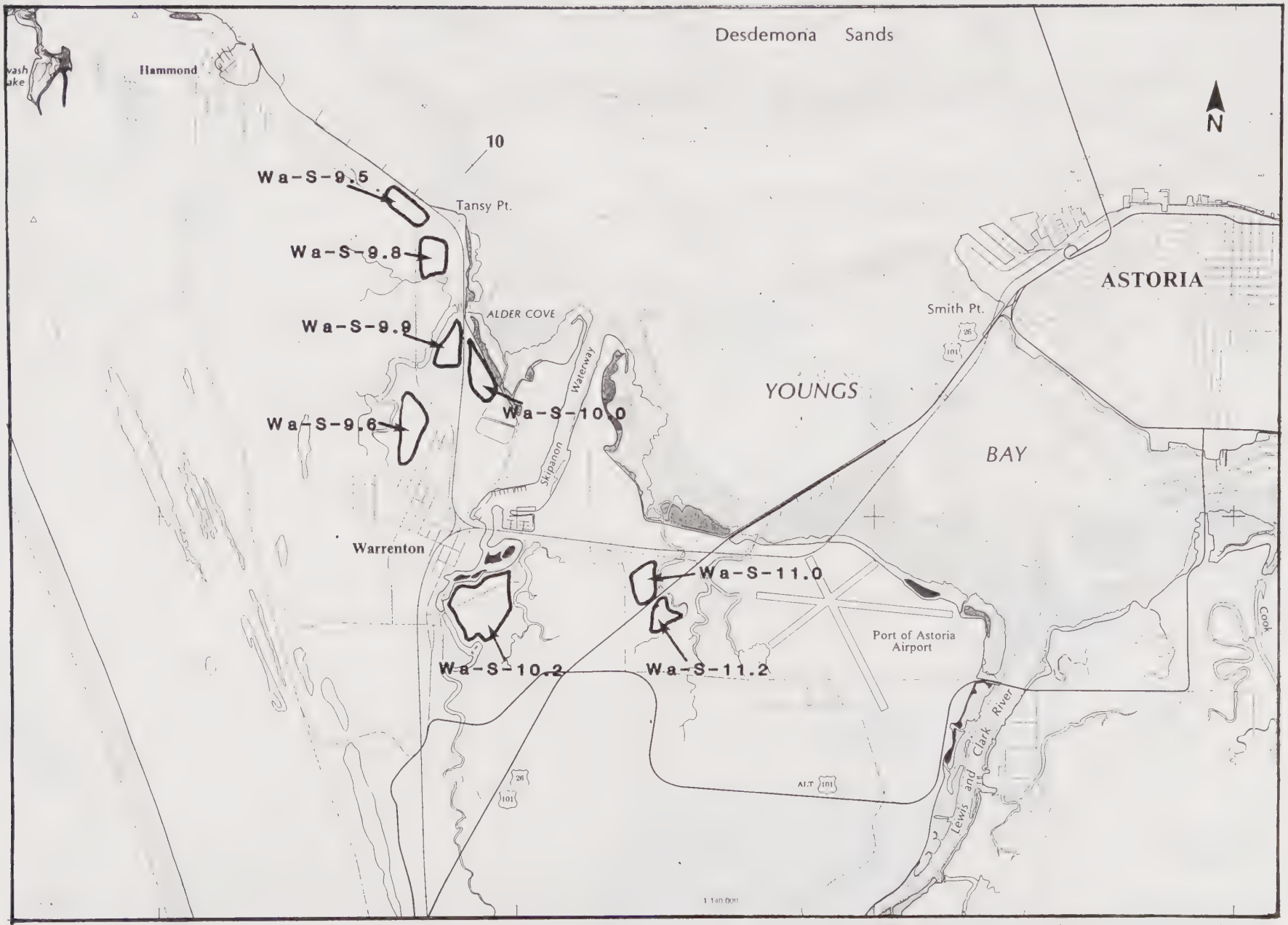
5-year dredging requirements for Pillar Rock Bar. Only required beach nourishment sites are designated in this plan. If the site needed in the future, it can be designated as a disposal site provided its use meets all applicable disposal policies.

9. The site is zoned Natural Shorelands. Use of the site would require a zone change and possibly an exception to Statewide Planning Goal 17.



Scale 1:50,000

Figure B-1. Map 1 Additional Dredged Material Disposal Sites



Scale 1:50,000

Figure B-2. Map 2 Additional Dredged Material Disposal Sites

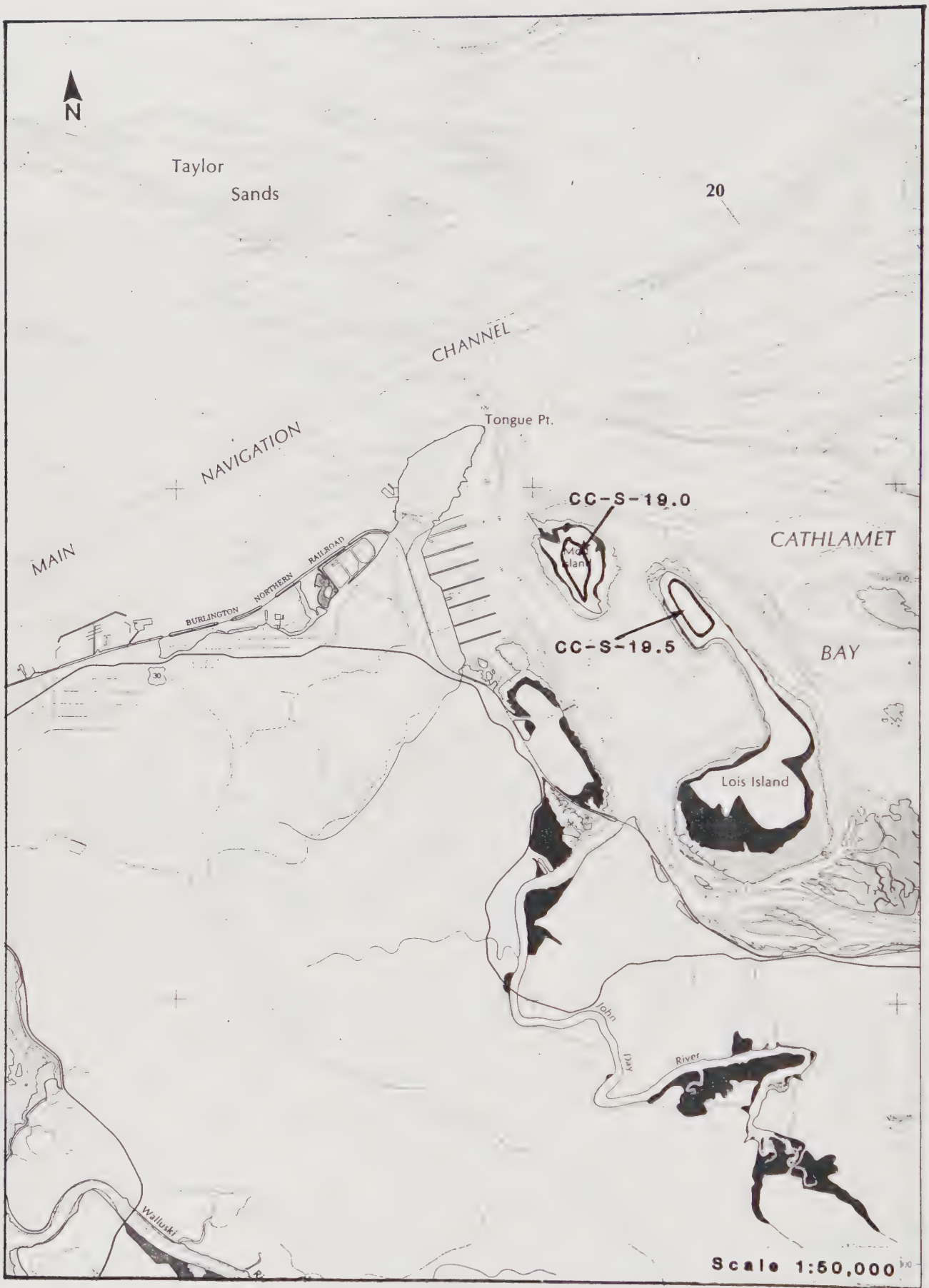


Figure B-3. Map 3 Additional Dredged Material Disposal Sites

Scale 1:50,000

Figure B-4. Map 4 Additional Dredged Material Disposal Sites

Scale 1:50,000

Figure B-5. Map 5 Additional Dredged Material Disposal Sites

APPENDIX C

SUMMARY OF INVENTORY REVISIONS

DREDGED MATERIAL DISPOSAL SITE INVENTORY REVISIONS

A draft site inventory was developed from the 1979 CREST Dredged Material Management Plan and other documents and was refined at Advisory Committee meetings 1 and 2. The following list summarized changes that were made to the sites inventoried. Changes in the priority rating are also included.

Pa-S-3.2 (Priority 1): no changes

Pa-S-3.0 (Priority 1): priority rating elevated from 2 to 1

CC-S-3.1 (Priority 1): site combined with CC-S-3.2 and boundaries altered to avoid sensitive dune habitat

CC-S-4.3 (no priority): deleted from main inventory; added to sites inventory in Appendix B

CC-B-3.5 (no priority): deleted

CC-B-5.8 (Priority 1): no changes

CC-S-6.8 (Priority 1): no changes

Pa-S-7.8 (no priority): deleted from main inventory; added to site inventory in Appendix B

Pa-S-8.1 (Priority 2): new site added to inventory

Pa-S-8.9 (Priority 2): boundaries altered to avoid wetlands

Pa-S-8.8 (Priority 1): no changes

CC-E-8.5 (Priority 1): no changes

Ha-S-7.6 (Priority 2): boundaries altered to avoid wetlands

Ha-S-8.0 (Priority 1): no changes

Ha-S-7.9 (Priority 1): no changes

Wa-S-9.5 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wa-S-9.4 (Priority 2): boundaries altered to avoid wetlands and priority rating elevated from 3 to 2

Wa-S-9.8 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wa-S-9.6 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wa-S-9.9 (np priority): deleted from main inventory; added to site inventory in Appendix B

Wa-S-10.0 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wa-S-10.1 (Priority 1): priority rating elevated from 2 to 1

Wa-S-10.2 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wa-S-10.5 (Priority 2): priority rating elevated from 3 to 2

Wa-S-10.9 (Priority 1): no changes

Wa-S-11.0 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wa-S-11.2 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wa-S-11.7 (Priority 2): priority rating elevated from 3 to 2

Wa-S-11.8 (Priority 2): priority rating elevated from 3 to 2

Wa-S-11.9 (Priority 2): new site added to the inventory

Wa-S-12.1 (Priority 2): priority rating elevated from 3 to 2

Wa-S-12.5 (Priority 2): priority rating elevated from 3 to 2

Wa-S-12.6 (Priority 2): boundaries altered to avoid proposed mitigation bank

Wa-S-10.7 (Priority 2): no changes

CC-S-12.9 (Priority 1): new sites added to the inventory

CC-S-12.7 (Priority 1): site moved to north

As-S-16.3 (Priority 1): priority rating elevated from 2 to 1

CC-S-17.2 (no priority): deleted

As-S-18.2 (Priority 1): no changes

As-S-18.7 (Priority 1): priority rating elevated from 2 to 1

As-S-18.9 (no priority): deleted

CC-S-18.8 (Priority 1): new site added to the inventory

CC-S-21.0 (Priority 1): no changes

Wk-S-21.2/CC-S-21.2 (Priority 1): no changes

CC-S-18.6 (Priority 1): priority rating elevated from 3 to 1; site expanded

CC-S-19.0 (no priority): deleted from main inventory; added to site inventory in Appendix B

CC-S-19.5 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wk-S-20.7 (Priority 1): priority rating elevated from 2 to 1

Wk-S-21.1 (Priority 1): priority rating elevated from 2 to 1

Wk-S-22.9 (Priority 2): no changes

Wk-S-22.4 (Priority 2): no changes

CC-B-23.1 (Priority 1): no changes

CC-S-23.5 (Priority 1): new site added to the inventory

CC-S-24.0 (Priority 1): site enlarged to include entire island

Wk-B-25.3 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wk-B-26.0 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wk-B-26.8 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wk-B-27.6 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wk-B-27.8 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wk-B-28.2 (no priority): deleted from main inventory; added to site inventory in Appendix B

CC-S-27.2 (Priority 1): new site added to the inventory

CC-B-27.2 (Priority 1): no changes

CC-S-31.2 (Priority 1): new site added to the inventory

CC-S-29.0 (no priority): deleted from main inventory; added to site inventory in Appendix B

Wk-S-33.6 (no priority): deleted

Wk-B-33.4 (Priority 1): no changes

Wk-S-35.0 (no priority): deleted from main inventory; added to site inventory in Appendix B

CC-S-33.1 (no priority): deleted

Wk-B-34.4 (no priority): deleted

CC-S-35.8 (no priority): deleted

CC-B-36.8 (Priority 2): no changes

CC-S-37.6 (no priority): deleted

CC-S-38.3 (Priority 1): new site added to the inventory

CC-B-38.3 (Priority 1): no changes

CC-S-38.9 (Priority 1): boundaries altered to avoid aquatic area and priority rating elevated from 2 to 1

Wk-S-36.9 (Priority 1): boundaries altered to avoid wetland

Wk-S-38.1 (Priority 1): boundaries altered to avoid wetland

Wk-B-38.7 (Priority 1): new site added to the inventory

Wk-S-38.4 (Priority 1): no changes

Wk-S-38.8 (Priority 1): no changes

Wk-S-40.8 (Priority 1): no changes

Wk-B-37.0 (no priority): deleted

Wk-S-40.9 (Priority 1): new site added to the inventory

Wk-S-41.2 (Priority 1): no changes

Wk-S-41.8 (Priority 1): no changes

Wk-S-41.3 (Priority 1): no changes

CC-S-41.7 (no priority): no changes

Wk-B-42.4 (Priority 1): no changes

Wk-S-42.5 (Priority 1): no changes

CC-S-42.9 (Priority 1): no changes

Wk-B-43.8 (Priority 1): no changes

CC-B-44.0 (Priority 1): no changes

Wk-B-45.0 (Priority 1): no changes

Wk-S-45.0 (Priority 1): new site added to inventory

Wk-B-46.3 (Priority 1): no changes

Wk-S-46.3 (Priority 1): new site added to inventory

Wk-B-51.3 (no priority): deleted

Wk-S-51.8 (Priority 1): no changes